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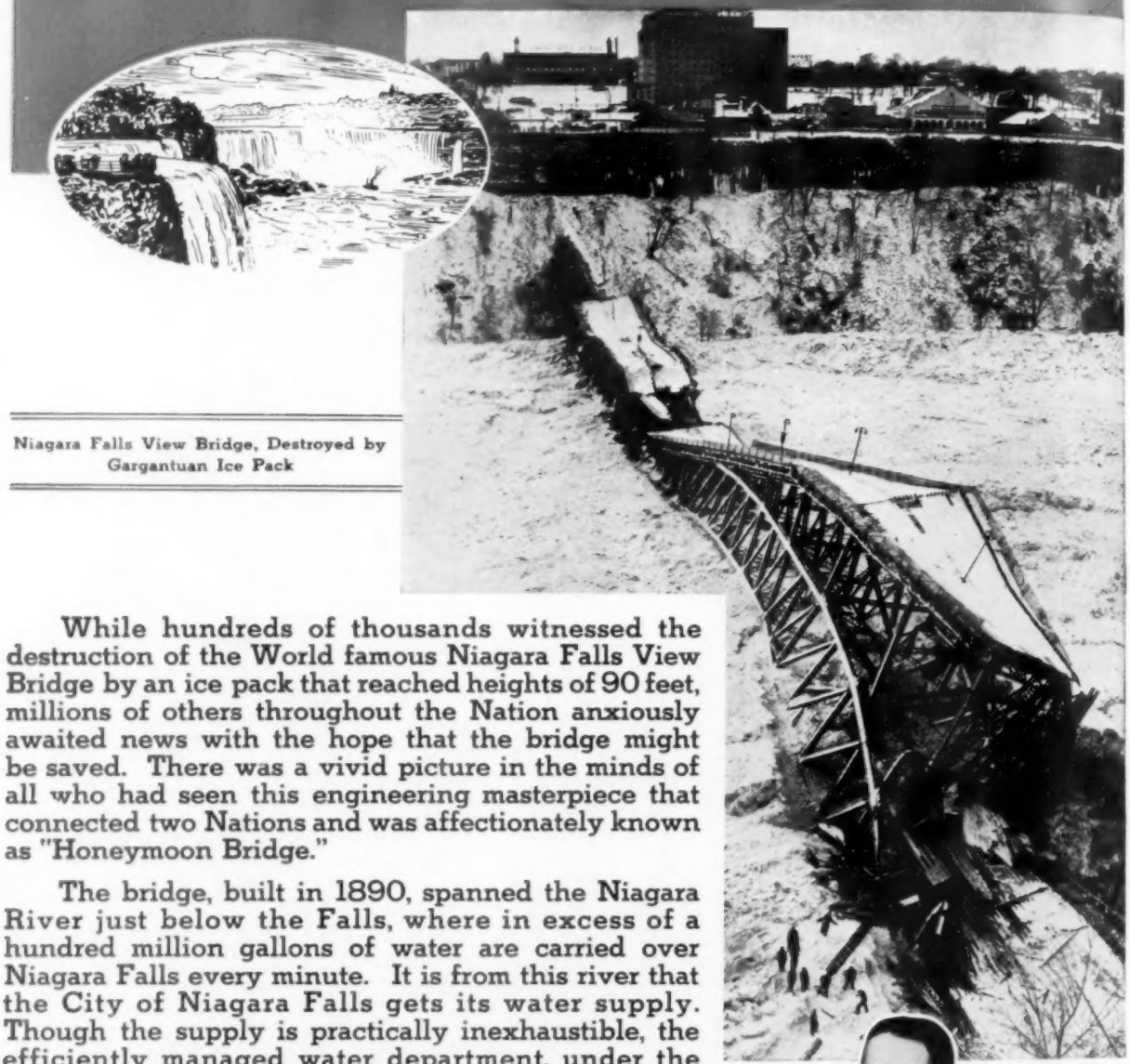
IN NIAGARA FALLS, New York



Niagara Falls View Bridge, Destroyed by Gargantuan Ice Pack

While hundreds of thousands witnessed the destruction of the World famous Niagara Falls View Bridge by an ice pack that reached heights of 90 feet, millions of others throughout the Nation anxiously awaited news with the hope that the bridge might be saved. There was a vivid picture in the minds of all who had seen this engineering masterpiece that connected two Nations and was affectionately known as "Honeymoon Bridge."

The bridge, built in 1890, spanned the Niagara River just below the Falls, where in excess of a hundred million gallons of water are carried over Niagara Falls every minute. It is from this river that the City of Niagara Falls gets its water supply. Though the supply is practically inexhaustible, the efficiently managed water department, under the supervision of Mr. David Mann, has effected savings in pumping and filtration costs through 100% metering, and Pittsburgh Water Meters have been used in this metering program for many years.

David Mann, Superintendent, Department of Public Service, Niagara Falls, N. Y.

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PITTSBURGH WATER METERS

Planning Conference — Housing Finance

Planners to Meet in Minneapolis and Mexico City

NATIONAL and international conferences of special interest to municipal and planning officials and engineers will be held this spring and summer in Minneapolis and Mexico City.

Minneapolis

The Minneapolis meeting, scheduled for June 20-22, will be the annual National Conference on Planning, at which the American Society of Planning Officials, American Planning and Civic Association, and American City Planning Institute will meet in a joint conference. For this year's meeting the program now in preparation provides for fewer formal papers than heretofore, and a larger number of "round table" conferences at which committee reports on a wide variety of subjects will be presented and discussed. As tentatively planned, these subjects include:

Planning a Housing Project
Urban Land Policies
Rural and Agricultural Zoning
State Planning
County Planning
Value of Planning to Public Officials
Integration of State and National Planning
Planning Education in the United States
Migration and Economic Opportunity
Traffic Studies in Relation to City Planning
Capital Budgets and Improvement Programs

The program will provide time for general meetings of the participating bodies and for a session dealing particularly with the planning problems and achievements of the twin cities. There will also be a trip to St. Paul, followed by a luncheon in that city.

Further information may be obtained from Walter H. Blucher, Executive Director of the American Society of Planning Officials, 850 East 58th Street, Chicago.

Mexico City

The conference in Mexico City will be the Sixteenth International Housing and Town Planning Congress, the sessions of which are ordinarily held in a European city. The Congress, which will be under the patronage of the President of the Mexican Republic and the Mayor of the city, is being arranged by the International Federation for Housing and Town Planning. The sessions in Mexico City, August 13-20, will be followed by a six- or seven-day study tour of some of the most important developments in Mexico.

The Congress subjects, based on carefully prepared reports from various countries, will be:

Housing in Tropical and Sub-Tropical Countries.

Planning Recreation and the Use of Leisure Time.

Underground Planning.—Reports will be collected from as many different countries as possible dealing with the geological condition of their subsoil; underground public services of different cities and possible future development; underground traffic, subways for pedestrian and car crossings, subways to railway stations, garages, parking spaces; subsoil conditions in relation to foundation work, characteristic foundation systems, and those applied to high buildings; safety of populace against aerial and gas attacks, flood, fire, noise, earthquakes; legislation with regard to underground planning.

It is also proposed to invite two persons to address the Congress and submit reports on:

(a) Town Planning Education
(b) National Planning in America

It is hoped that a considerable number of delegates will attend from Europe, to meet those from the United States, Canada, South and Central America, as well as delegates from other parts of the world.

The American Express Company, Inc., is undertaking to make all the necessary arrangements for travel and accommodation for the Federation on behalf of delegates attending the Congress.

For the full program and other details address the Chairman of the Executive Committee in Mexico, Carlos Contreras, Ramos Arizpe No. 1, Mexico, D. F.

Remove Obstacles to Housing Finance!

ACTION by city and county planning commissions to remove obstacles that now deter approval of building loans in large districts of nearly all urban communities, is urged by the Southern California Chapter of the American Institute of Architects. Charles H. Cheney, of Palos Verdes Estates, chairman of its special housing committee, has addressed fifty planning commissions of that state, asking their cooperation to find out what areas cannot obtain mortgage insurance or loans, and the appropriate relief to be given. The national body has also been requested to bring the matter to the attention of all the thousand or more planning commissions of the country. The letter says:

"Early appointment of a Housing Committee from the members and staff of your planning commission is suggested as one of the urgent steps necessary to revival of building and prosperity.

"The recent passage of FHA amendments liberalizing mortgage insurance will greatly stimulate private building, but only in those parts of your city, and of other cities, *which are found eligible.*

"A most serious situation exists in nearly every urban community because in anywhere from as low as one-fourth to an estimated seven-eighths of the entire city area, in the less fortunate cities, *no mortgage insurance can now be obtained.* These areas are not yet properly eligible for such housing finance.

"Wrong zoning, no zoning, insufficient or no neighborhood conveniences, such as parks, playgrounds, churches, amusements, etc.; deteriorated neighborhoods, lack of proper streets, transportation, etc.; bad special assessment and tax situation in some districts—in short, lack of coordinated planning, are the principal reasons for giving low appraisals or preventing financing of new construction and alterations in these districts, as reported by banks, loan companies, FHA, and HOLC.

"Probably nobody knows how bad the situation is in your city. Obviously, an accurate check-up should be made as soon as possible. Some districts will be found easier to rehabilitate and will need less rezoning or other improvements than others. We suggest that these districts be worked on first, without waiting for a general rezoning or other improvement plan involving the whole city.

"A second kind of housing, for slum clearance, and better housing for the under-privileged involving possible public aid, should also be studied now. However, this must be kept distinct, in the public mind, from the great general volume of housing to be privately financed, mentioned above, which it is so important to make possible immediately.

"Determination of need, and neighborhood problems, are planning functions. They are distinct from the administration of slum clearance housing projects, which, moreover, can be organized with Government aid only after the need for them is fully shown. A separate 'Housing Authority' is required to manage and build a low-cost housing project, if Government aid is obtained."

Nearly one-third of the total Los Angeles metropolitan area is not yet eligible for mortgage insurance and proper financing of housing, although FHA did the biggest business in America in 1937, in this area, the committee found; 42,000 lots are zoned for business in the central urban area alone, where residence financing will not be approved.

1,500,000 Gallons Daily FOR THE CITY OF COLUMBIA, MO.

From a depth of twelve hundred feet, the latest of three Layne well water supply units installed for the city of Columbia, Missouri, sends forth 1,500,000 gallons of clear sparkling water daily. When the city officials of Columbia, Missouri, enjoyed an annual operating saving of $19,000.00 on their first Layne Pump, it was only logical that, as their need for water increased, they would authorize the installation of other Layne Wells and Pumps. Such savings were too important to overlook.

Throughout the Nation, cities and industries of all sizes are enjoying substantial savings on water cost by authorizing Layne high efficiency Pumps and properly designed and installed wells.

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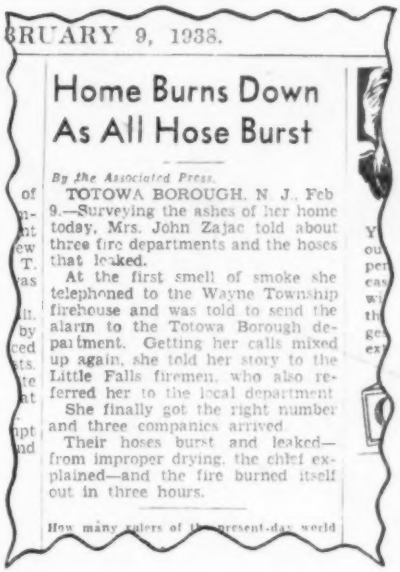
Our Municipal Notebook

Comfort Stations—Now

THE need for public comfort stations "has been apparent from the time men began to gather in colonies greater than the merest villages," said A. R. McGonegal in *The Architectural Forum* of September, 1927; concluding with: "It is time the average American city realizes that public comfort stations are a necessity, and that their provision and maintenance have a distinct moral and economic bearing on the life of the city as well as on the public health and public comfort."

A plan for the provision of these facilities along practical lines was proposed by United States Senator Royal S. Copeland on page 46 of the February issue of THE AMERICAN CITY. City engineers are invited to discuss this idea, which Architect Benjamin W. Levitan will translate into working plans in a coming issue.



RUARY 9, 1938.

Home Burns Down As All Hose Burst

By the Associated Press.

TOTOWA BOROUGH, N. J., Feb 9.—Surveying the ashes of her home today, Mrs. John Zajac told about three fire departments and the hoses that leaked.

At the first smell of smoke she telephoned to the Wayne Township firehouse and was told to send the alarm to the Totowa Borough department. Getting her calls mixed up again, she told her story to the Little Falls firemen, who also referred her to the local department.

She finally got the right number and three companies arrived.

Their hoses burst and leaked—from improper drying, the chief explained—and the fire burned itself out in three hours.

How many sisters of the present-day world

Crosses

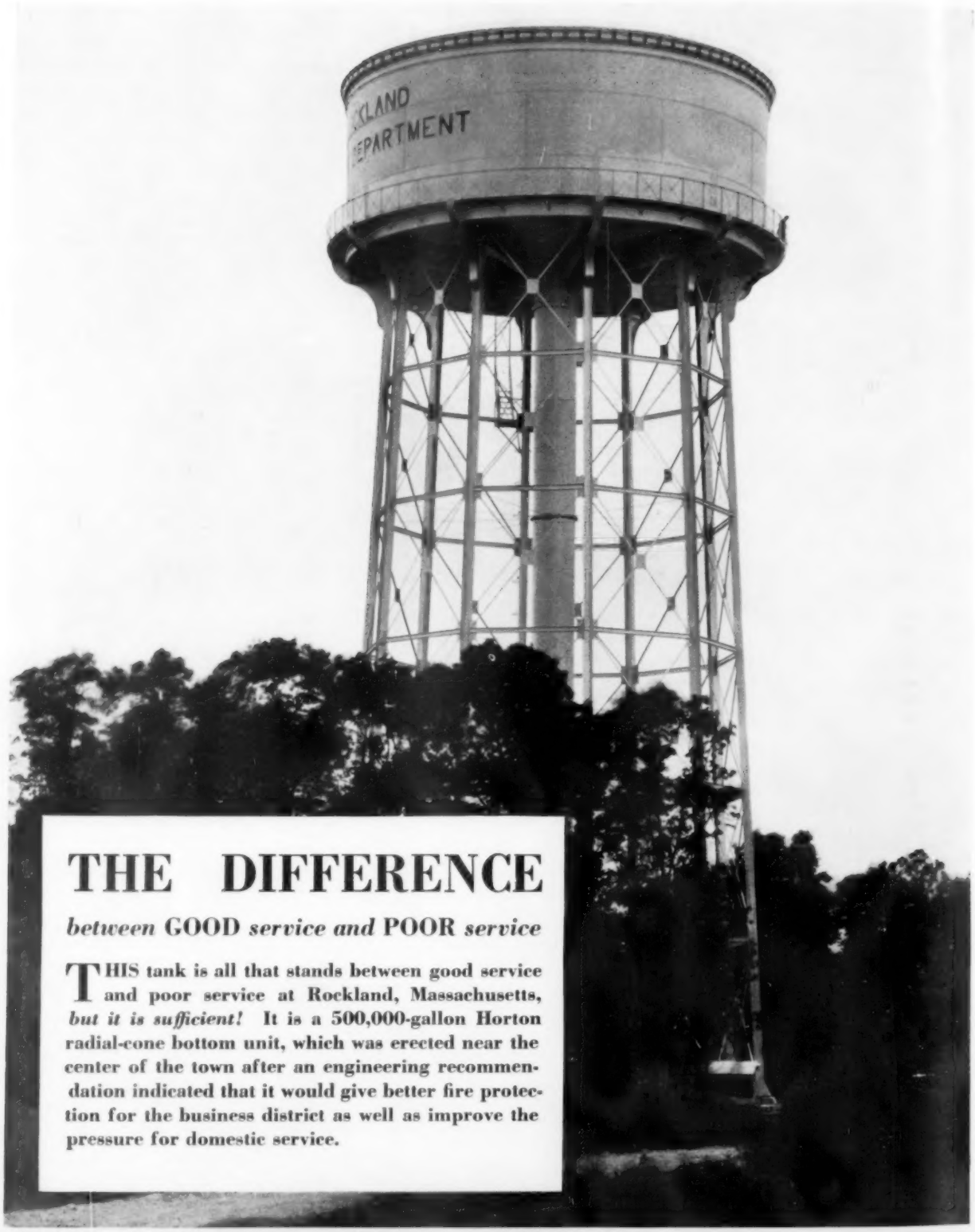
"CROSSES" is the title which the *Newark Evening News* gave to the accompanying picture, which it published on February 7. The crosses shown indicate what Military Park in the heart of Newark, N. J., would look like, if it were the burial ground of the 2,834 persons killed by automobiles in the state of New Jersey in 1937. The state's 4 per cent increase in fatalities checks with the 4 per cent increase throughout the nation. Related 1937 national increases were 4 per cent in gasoline consumption and 10 per cent in passenger-car sales.

Uniform Utility Accounting

MUNICIPAL electric utility managers and also their superiors are more and more desirous of presenting a true picture of plant condition and results. In this age of modern systems and accounting machines there is no excuse for not having all the essential facts.

"Where there is the will to run the municipal utility right, a way can be found under almost any charter or form of municipal organization," says Harry Barker, Advisory Engineer of the Municipal Electric Utility Association of New York, on page 69 of this issue. He then explains quite fully how the office routine of these utilities can be organized onto a sound and uniform basis which will instantly reveal the true condition of the property to the management (municipal officials), the owners (the local public), and the state utility commission. Uniform accounting and billing stand second only to efficient generating and distribution equipment.

Articles describing actual business systems of small and medium-sized plants will appear in later issues of THE AMERICAN CITY.



THE DIFFERENCE

between GOOD *service and* POOR *service*

THIS tank is all that stands between good service and poor service at Rockland, Massachusetts, *but it is sufficient!* It is a 500,000-gallon Horton radial-cone bottom unit, which was erected near the center of the town after an engineering recommendation indicated that it would give better fire protection for the business district as well as improve the pressure for domestic service.

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Detroit.....1501 Lafayette Bldg.
Philadelphia..1616 "1700" Walnut St. Bldg.
Boston.....1501 Consolidated Gas Bldg.
Birmingham.....1502 N. Fiftieth Street
Dallas.....1406 Liberty Bank Bldg.
San Francisco.....1033 Rialto Bldg.
Houston.....2919 Main Street
Tulsa.....1625 Hunt Bldg.
Los Angeles.....1403 Wm. Fox Bldg.

Fabricating plants in CHICAGO, BIRMINGHAM, and GREENVILLE, PA.

Water-Supply Costs and Problems

The Cost and Value of Water Works

THE cost of water for household use for the average small family does not vary greatly from the cost of morning and evening newspapers or a daily street-car ride for the head of the house from his home to his work. When it is reflected that at least half of the investment in the average water works is justified by the fire protection it affords, and that in a city of 100,000 population the cost of furnishing fire-fighting capacity in the water-works system is less than half the cost of maintaining the fire department required to use it, there can be no doubt that municipal water systems contribute as much per dollar of cost to the present standard of urban living as any other commodity or service.

As a commodity, water should be developed and sold in large volume as one of the least expensive contributions to higher living standards. There exists a definite trend in this direction by its use in connection with refrigeration and air conditioning, and in swimming pools now being constructed in many communities to offer clean-water bathing as an attractive and much more healthful alternate to the polluted waters of the neighborhood streams, ponds, and shores.

More than half of the value of all the water works in the country lies buried in the system of distribution pipes, valves, hydrants, meters and other accessories amounting to a total of 1½ billion dollars, the greater part of which is invested in cast iron pipes. Before filtration was practiced, such pipes, on the average, lost about 23 per cent in carrying capacity in the first twenty years of use, but since filtration has become widespread in water supplies, this loss in carrying capacity has increased and even doubled in many instances. Comparable losses have been experienced in consumers' plumbing systems. Present technology in water treatment can prevent such appalling loss of value and even reduce to a substantial degree the prefiltration losses.

—From the section on Water Supply, prepared by MALCOLM PIRNIE, consulting engineer, New York City, in the National Resources Committee report on "Technological Trends and National Policy."

Water Meters in Cambridge, Mass.

ACCORDING to the Report of the Water Board of Cambridge, Mass., for the year ending December 31, 1936, the daily average per capita consumption is 99.82 gallons, and 99 per cent of the services are metered. These include 13,635 domestic and industrial services, 79 public buildings and city services, although no charge is made to the city for water for any purpose, and 66 fire supplies, making a total of 13,780 meters in use.

Conserving Water in Air Conditioning

WITH the growth of summer air conditioning, the use of water will probably follow the general and economical conservation of the water used for cooling and refrigeration, according to a report of a Committee of the Hackensack Water Co., which is studying this question. "All of the operations in air conditioning involve the supply or disposal of water," the report states. The quantity of water, however, is fairly insignificant in all functions except that of cooling. Fortunately, there is already available equipment adequate for the conservation of cooling water in large installations, which, if generally used, would avert any serious effect on water supplies and sewage systems.

This equipment is an adaptation of the familiar cooling tower which has been in use in ice plants and breweries for many years. The new adaptations are much more compact than the old conventional cooling towers, but both work on about the same principle as the common automobile cooling system where water for cooling the engine is in turn cooled by air circulation and only a small amount of water is lost by evaporation.

In the territory supplied by the Hackensack Water Co., composed largely of suburban towns, small manufacturing centers and three cities of from 18,000 to 60,000 population, there are now a total of about 47 air-conditioning systems of various sizes, having an aggregate refrigerating capacity of about 455 tons. Estimates for the past summer indicate that during extreme hot weather the water used for air conditioning adds about 2½ per cent to the total average consumption of water for short periods. The quantity used so far this year, however, indicates that only about one-fourth of one per cent of the total annual consumption will be utilized for air conditioning.

The Committee strongly advises the use of water conservation equipment wherever large units are installed, or where economy of operation, due to lower water consumption, would warrant the additional expenditure. In the larger conditioning systems, the added cost of water conservation equipment is usually warranted by the resulting reduction in operating expense. In the small systems, water-conservation equipment adds some complications to the operation and maintenance, for which expert operators and maintenance men should be employed.

If and where it becomes essential to use water-conservation equipment on small systems, the present basic objections will probably be met by improved design and control of equipment and through better organization of service, so that eventually the normal growth of air conditioning will probably not be seriously retarded for lack of water.

New Standards for Calking Joints with Lead

BECAUSE of the flexibility and durability, calked lead joints are used so generally for cast iron water mains, sewer and plumbing installations, the Lead Industries Association recently adopted rigid standards for calking lead and is making arrangements for producers to include the "Lead Industries' Seal of Approval" on calking lead meeting these standards. Therefore, if buyers or specifiers of calking lead insist on material bearing this seal, they will be assured of lead of proper purity to make the highest-quality job. It is the same arrangement that was successfully put into operation at the beginning of 1937 for lead pipe, traps and bends.

To give lead the necessary flexibility and durability, certain impurities must be substantially excluded. With this in mind, the standards were established and are as follows:

Specification for Calking Lead

"Lead for calking purposes shall contain not less than 99.73 per cent pure lead. Impurities shall not exceed the following limits:

Arsenic, antimony and tin together	0.015%
Copper	0.08 "
Zinc	0.002 "
Iron	0.002 "
Bismuth	0.25 "
Silver	0.02 "

"The producer's name or identification mark shall be clearly cast or stamped upon each piece of lead for calking purposes or, in the case of lead wool or other forms that cannot be so marked, shall appear upon the label or package."

Users may either employ this entire specification for calking lead or may accomplish the same result merely by insisting that the lead bear the "Lead Industries' Seal of Approval."

The value of lead for jointing cast iron pipe is strongly evidenced by the many severe tests to which it is put in service. It takes up settlement without damage to pipe or joints, is unaffected by thiobacilli, and permits electricity to flow between lengths of pipe without electrolytic corrosion, which often results if non-conducting joints are used. An example of reliance on lead joints in severe service is a water-main installation recently made at the Newark, N. J., airport. It consists of 7,500 feet of 20-inch and 500 feet of 30-inch pipe, all jointed with poured lead. The line is in marshy, reclaimed land, beside a highway carrying heavy traffic, and is therefore liable to considerable movement, which will be provided for by the lead joints. They will also endure despite the attacks of corrosive substances like salt water in the ground at that location.

A. W. W. A.
Annual Convention
April 25-28, 1938
NEW ORLEANS, LA.

Dangerous Waters!

WHEN floods bring the threat of polluted water supplies and of water-borne disease, HTH proves itself an invaluable ally to water works and health officials. With HTH, emergency hypochlorination can be applied quickly, on the spot, wherever pollution is found. A highly concentrated chlorine carrier, containing 70% of available chlorine, quickly soluble in water, HTH can be transported to the job and put to work before a dangerous situation has time to develop.

Then there is the aftermath of flood conditions, as receding waters leave a seemingly hopeless task of cleaning up and disinfecting flooded areas and buildings of every kind. Here again health authorities find HTH of invaluable assistance in restoring sanitary conditions in scores of places where a less concentrated, less mobile or less soluble source of chlorine cannot serve as effectively.

Fortunately, floods do not strike frequently at the average community nor do they strike so quickly as to find local officials wholly unprepared. But there are day-to-day emergencies, too, which require prompt and effective chlorination—broken water mains, an abnormal water load due to a serious fire, polluted wells, failure of a chlorinator, an interruption in the power supply—just the sort of jobs for which HTH is made to order.

No wonder that so many experienced water works men keep an ample supply of HTH always on hand, not only as an important measure of preparedness for every sort of emergency, but also because they find it so useful in scores of every-day sanitation jobs! Write or wire us for full information and nearest available stock.

The MATHIESON ALKALI WORKS (*Inc.*) 60 East 42nd St., New York, N. Y.

Liquid Chlorine . . . HTH and HTH-15 . . . Soda Ash . . . Caustic Soda . . . Bleaching Powder . . . Bicarbonate of Soda
Ammonia, Anhydrous and Aqua . . . PH-Plus (Fused Alkali) . . . Solid Carbon Dioxide

BE PREPARED WITH HTH FOR ANY EMERGENCY!

Municipal Engineering

THE TEMPORARY ROADWAY BUILT AROUND THE MOUNTAIN SLIDE THAT DESTROYED THE RIVERSIDE VIADUCT IN LOS ANGELES, CALIF.

Although an estimated 1,500,000 yards of débris slid down, this new roadway was completed and in use within 12 working days

AN ALLIS-CHALMERS SPEED PATROL SMOOTHING OUT WINTER RUTS IN CHENOA TOWNSHIP, ILL.

Street Paving Planned in Copenhagen

THE municipal budget of Copenhagen, Denmark, for the fiscal year April 1, 1928-March 31, 1939, provides for 1,000,000 kroner ($220,000) for the modernization and improvement of eleven streets in Copenhagen. Four streets will be covered with asphalt macadam over their present brick construction; one street will be broadened and laid with wood, asphalt and brick; while the remaining six streets will be provided with asphalt on top of concrete. The work is to be started this spring, according to the U. S. Bureau of Foreign and Domestic Commerce.

Practical Tests for Civil Service Employees

THE City Civil Service Commission of Milwaukee, Wis., believes in testing the practical ability of prospective cement finishers. R. W. Gamble, Superintendent of Street Construction, reports that a long slab of concrete sidewalk was poured and the prospective finishers were required to hand-trowel the surface to prove their ability. This work was carried on supplemental to written tests. Three contractors judged the quality of the work done by each applicant.

Similar procedure was followed in an examination for asphalt rakers and tampers. It has been found that these practical demonstrations are superior to other types of examinations for skilled laborers. The eligible lists established from these examinations have furnished competent mechanics.

Flood-Control Project Near Portland, Ore.

AN IMPORTANT undertaking in the execution of the city plan of Portland, Ore., is a large WPA flood-control and stream-improvement project costing about $185,000 near Milwaukie City, Clackamas County, Ore. The work consists of straightening, cleaning, and riprapping the channel of Johnson Creek, from its junction with the Willamette River to a point some ten miles east of Portland in the vicinity of Gresham, Ore.

Johnson Creek drains a large area of mountainous territory lying east of Portland and is subject to frequent floods of a rather violent character. The upper stretches of Johnson Creek are comparatively steep, affording a rapid run-off, while from Gresham to the mouth of the creek it reaches a flood plain, has a low gradient and a meandering course. These conditions on the lower section cause frequent serious floods where large areas on either side of the creek are inundated with the resultant damage to property and hazard to lives.

Johnson Creek has been improved under State Emergency Relief and WPA.

BANK PAVING ALONG JOHNSON CREEK, ORE.

An Oil Reservoir IN A Fire Hydrant

1. Insures easier turning of the operating nut, since the threads and collar are lubricated.
2. Prevents corrosion of parts, since they are constantly immersed in oil.
3. Eliminates excessive wear of parts because the oil film prevents friction and wear.
4. Parts being in constant oil bath, no ice forms (from atmospheric condensation) between moving parts.
5. Oil reservoir and packing gland being of one piece, oil seeps from reservoir on top of hydraulic packing, keeping it moist and preventing its drying out, which would cause water leakage.
6. One filling of Mueller-Columbian Hydrant Lubricant will last many years and oil will not freeze to minus sixty degrees. (—60).
7. Expense incident to constant oiling and inspection is not necessary.

The Mueller-Columbian Fire Hydrant does its own oiling because it has an oil reservoir in the operating unit that automatically and continuously keeps all working parts lubricated under forced pressure.

When the operating nut is turned to open the hydrant, the threaded portion of the steel stem recedes from the operating nut until the top of the stem finally reaches the point just below the horizontal oil holes drilled through the operating nut. When this point is reached, oil from the reservoir flows through the lateral oil holes into the hollow portion of the operating nut to the same level existing in the oil reservoir. When the operating nut is turned to close the hydrant, the top of the stem passes the lateral oil holes, trapping the oil within the operating nut. As the closing of the hydrant is continued, the oil is carried upward, the area being constantly restricted until finally it is literally forced through the oil passages drilled in the top of the operating nut, passing between the bearing surfaces of the operating nut and the hold-down nut. Any surplus flows by gravity back into the oil reservoir, thus completing the cycle. This is the ONLY Fire Hydrant with this exclusive feature that is saving many communities many dollars each year.

MUELLER CO., CHATTANOOGA, TENN.

MUELLER-COLUMBIAN
FIRE HYDRANTS - GATE VALVES

Municipal Airports

St. Paul Bond Issue for Holman Airport

TO meet the challenge of aeronautical development which threatened to make the city's airport obsolete because it could not provide proper take-off and landing space for large new planes, the citizens of St. Paul, Minn., in a special election voted approval of a $435,000 bond issue for the improvement of Holman airport. The funds voted locally will be added as the share of the sponsoring city to a Federal allotment of $1,394,000 for improving the landing field.

Department of Commerce and postal authorities recently took the St. Paul airport off transcontinental mail routes, and at least one airline using large transports to the Twin Cities had transferred some of its operations from St. Paul to Minneapolis, where airport facilities were suitable for the larger airplanes.

Supporters of the bond issue had conducted an intensive campaign for almost a month before the November 16 election, pointing out among other things that the city was in danger of losing its position as a center of distribution for northwest mail if the aviation facilities were allowed to become obsolete. The total of $1,829,000 from the bond issue and Federal money will be used to lengthen existing runways and add new ones. The longest runways after the improvements are complete will be 5,300 and 4,300 feet each. Three new runways will be constructed as part of the program.

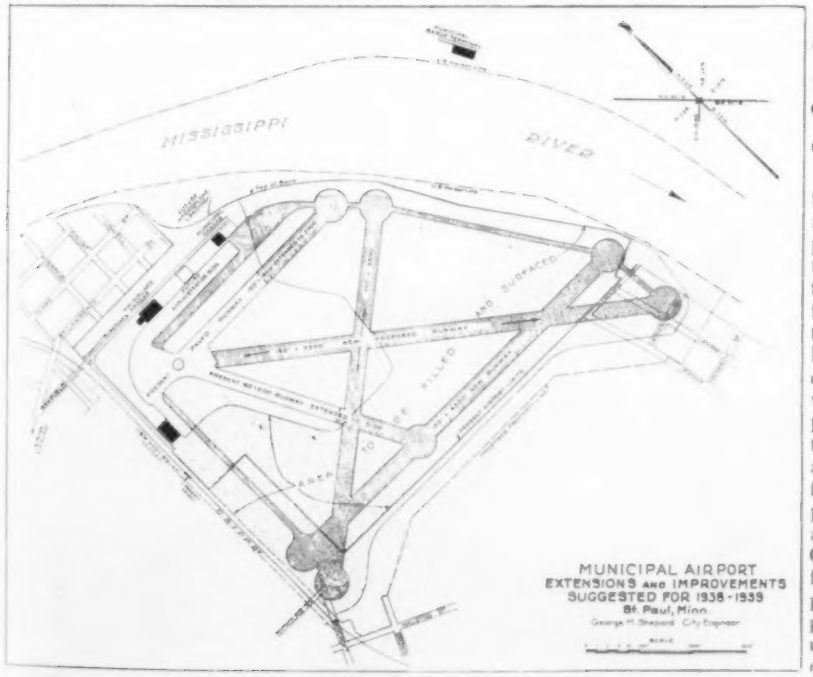
In favoring the bond issue, the special election showed a 3 to 2 advantage for the improvements. The total vote cast was light, only some 40,000 going to the polls.

Airports in the United States

According to the latest report of the Bureau of Air Commerce on January 1, 1938, there 2,299 airports and landing fields in the United States. (See the table below.)

STATUS OF AIRPORTS AND LANDING FIELDS BY STATES, JANUARY 1, 1938

	Municipal	Commercial	Intermediate	Auxiliary	Navy	Army	Miscellaneous Government, Private and State	Totals	Partially or Fully Lighted
Alabama	10	2	7	14	0	3	1	37	11
Alaska	1	2	0	87	0	0	0	90	2
Arizona	10	5	9	19	0	1	0	44	17
Arkansas	12	1	4	8	0	0	1	26	7
California	51	41	19	46	5	4	15	181	63
Colorado	12	4	3	14	0	0	0	33	6
Connecticut	7	6	1	3	0	0	1	18	7
Delaware	1	3	0	1	0	1	0	6	3
Dist. of Columbia	0	1	0	0	1	1	0	3	3
Florida	48	14	4	48	5	1	5	125	28
Georgia	23	3	11	21	0	1	0	59	19
Idaho	18	0	10	11	0	0	9	48	15
Illinois	13	30	6	0	0	2	3	54	26
Indiana	12	14	3	7	0	2	4	47	20
Iowa	16	6	3	6	0	0	1	32	10
Kansas	21	5	5	9	0	2	0	42	15
Kentucky	7	0	3	7	0	1	0	18	4
Louisiana	12	1	3	10	0	1	3	30	8
Maine	9	7	0	5	0	0	1	22	4
Maryland	2	8	1	1	1	3	3	19	8
Massachusetts	7	19	1	8	1	0	0	36	9
Michigan	57	12	0	16	1	3	35	124	23
Minnesota	10	3	3	14	0	1	0	31	9
Mississippi	13	0	6	12	1	0	0	32	11
Missouri	10	5	13	4	0	0	5	37	19
Montana	25	0	13	26	0	0	10	74	18
Nebraska	16	3	4	5	0	2	1	31	16
Nevada	3	3	9	6	1	0	0	22	12
New Hampshire	6	2	0	5	0	0	0	13	3
New Jersey	5	11	0	1	2	2	1	22	8
New Mexico	5	4	10	12	0	1	3	35	13
New York	28	33	4	13	0	4	7	89	27
North Carolina	12	5	3	6	0	1	0	27	9
North Dakota	18	3	5	14	0	0	1	41	9
Ohio	31	34	9	24	0	4	12	114	23
Oklahoma	19	5	7	8	0	1	0	40	22
Oregon	12	3	9	10	0	0	2	36	16
Pennsylvania	19	57	9	10	1	1	12	109	38
Rhode Island	0	2	0	3	1	0	1	7	1
South Carolina	10	3	4	7	3	0	2	29	7
South Dakota	17	2	0	4	0	0	0	23	1
Tennessee	12	1	8	5	0	0	0	26	13
Texas	54	9	24	24	0	13	1	125	50
Utah	6	1	17	2	0	0	0	26	19
Vermont	7	3	0	1	0	1	0	12	1
Virginia	10	10	8	10	2	1	2	43	17
Washington	22	7	6	6	1	3	4	49	15
West Virginia	10	5	0	8	0	0	1	24	3
Wisconsin	21	16	4	6	0	0	2	49	18
Wyoming	14	0	10	15	0	0	0	39	13
Totals	764	414	283	602	26	61	149	2,299	720



Results of Conference on Airports by Department of Commerce

THE Department of Commerce Conference on Airports, held in Washington, D. C., December 6 and 7, 1937, made recommendations that, (1) in general, airport ratings be abolished and (2) limitations in airport size be imposed only by the Bureau of Air Commerce after careful consideration and following completion of a national survey of airport needs, both economic and safety factors to be considered. Resolutions were adopted which called for preparation by the Department of Commerce of a recommendation to Congress for the (1) adoption of a national air policy on the division of financial and other responsibility for airport construction and operation, and (2) adoption of a national airways plan. Congress was requested to provide funds for the survey, and the Conference appointed a committee to formulate proposals for authorization of funds "to be used as grants to states and political subdivisions owning airports."

ATTENTION!

OFFICIALS OF CITIES AND TOWNS OF 2,500 TO 25,000 POPULATION

Handle Sewage Sludge the OLIVER UNITED Way

• IT'S CLEAN
• IT'S SIMPLE
• IT'S MODERN

The Oliver United way of handling sewage sludge is the modern way! It is the way many large towns and small cities now take care of this increasingly troublesome problem. It is the way a number of large cities have adopted on a large scale during the past few years.

The Oliver United way in smaller communities is to use the compact Oliver Continuous Mechanical Sludge Dewaterer shipped and installed all mounted and assembled with accessories for treating and handling the sludge. A typical example can be found at St. Charles, Ill., where the unit illustrated is installed. This city claims to have "the most modern sewage-handling system in the country."

Large towns and small cities are especially urged to consider installing one or more of these units. The method is clean, simple and modern.

• • •

Cities that are outgrowing their sand beds could use to advantage one of these units or a larger Oliver to take care of the overload. This idea has already been adopted. It's the coming thing.

OLIVER UNITED FILTERS INC.

NEW YORK
33 West 42nd St.

CHICAGO
221 N. LaSalle St.

SAN FRANCISCO
351 California St.

Moving Forward in Health

Needs in Milk Control Listed in Report

IT is essential both for public health and for the benefit of the millions dependent on the dairy industry for a livelihood that all possible precautions be taken to safeguard the quality and safety of the nation's milk supply. The American Municipal Association has already announced its forthcoming report on milk control in America, and states that the time is now ripe for the introduction and improvement of milk regulations which had necessarily to be postponed during the depression years.

The report covers the principal steps taken by Federal, state and local authorities to regulate the milk supply, and includes also those developments still necessary further to purify milk in every section of the country and at the same time aid the industry.

Among achievements listed in the effort to increase consumption of milk and safeguard consumers against milk-borne infection are the following:

1. Only a negligible proportion of the raw milk consumed now comes from non-tuberculin-tested cows, and even the percentage of pasteurized milk which comes from such cows is decreasing rapidly.

2. Pasteurization of milk is much more general than a few years ago. The proportion of the total milk supply that was pasteurized in 500 cities of over 10,000 rose between 1927 and 1931 alone from 81.1 per cent to 87.5 per cent.

3. Delivery methods have improved, with practices of transfer of milk from one open container to another disappearing. Even in retail establishments, sealed glass bottles, single service containers and closed dispensing apparatus have in most districts superseded the dipping methods.

4. The uniform standards set up by the U. S. Public Health Service in consultation with milk industry representatives and of state health and Federal agricultural authorities have found wide local acceptance. Uniform standards are also universal in the South, and are reported spreading to other sections. Seven hundred communities have adopted the recommended ordinance, and several others have incorporated many of its requirements.

There are still many things remaining to be done to insure the safety of the milk supply. The report lists these:

1. With bovine tuberculosis practically eliminated, it is now necessary to eliminate Bang's disease, one of the causes of undulant or Malta fever. This can best be achieved by adoption of laws by Federal and state governments guaranteeing compensation for destroying reactors, and by prohibiting the transport of non-tested cattle across state lines.

2. More accurate reporting of milk-borne infection outbreaks is needed. There is still room for improvement in the investigation and identification of the causes of such outbreaks, by the more accurate analysis of consumers' and dealers' sources of supply of milk and milk products.

3. Achievements in milk control serve to illustrate the fact that milk regulations should be uniformly applied to all phases of production, processing and distribution if they are to have any real value.

Pittsburgh Clean-up Campaign Began in 1935

PRIOR to 1934 little had been done in Pittsburgh, Pa., to curb the indiscriminate and illegal use of city streets and alleys as dumping-grounds for ashes and rubbish. The first real accomplishment in this direction was made by the Bureau of Sanitation in conjunction with the Bureau of Highways in 1934, when a definite organization was founded to function as a unit to clean up city streets, alleys, lots and hillsides. A group of public-spirited citizens was enlisted in the cause of civic cleanliness and was held together by mere voluntary agreement, without official status, without funds and with scant publicity. In spite of such handicaps they made substantial progress.

In 1935 with the assistance of the Chamber of Commerce, the Board of Education and prominent civic and religious organizations, a concerted clean-up campaign was conducted in the Hill District. Household ashes were removed free of charge by the Bureau of Sanitation in cooperation with the Bureau of Highways and Sewers, while a special and extra removal of garbage and rubbish was undertaken by the city contractors with the permission of the Health Department and under the supervision of the Bureau of Sanitation; families served numbered 8,000, and some 820 truck loads of refuse were removed.

In 1936 a city-wide clean-up campaign was conducted by the Bureau of Sanitation, Department of Public Health, and the Bureau of Highways and Sewers, Department of Public Works. It was city-wide in that the most notoriously and habitually dirty portions of all parts of the city were afforded the opportunity to have accumulated household refuse removed without charge. Approximately 80,000 family units, about one-half of all those in Pittsburgh, were served; 5,731 truckloads of débris were hauled away.

In 1937 another city-wide campaign was successful. Approximately 80,000 family units were again served, but this time at a cost half that of the 1936 campaign, reflecting the improvement in conditions. Ashes and rubbish were removed to the amount of 3,142½ truck loads.

In both city-wide campaigns over 180,000 notification cards were delivered to householders by children of the various public and parochial schools. In recognition of this outstanding service to the taxpayers of the city, the Mayor in June appointed a group of citizens to function as the official Cleaner Pittsburgh Committee.

—From *Pittsburgh Health*, published by the Department of Public Health, Pittsburgh, Pa.

Drinking Cups and Drinking Fountains

THE common drinking cup has long been prohibited by law in Connecticut because of its attendant dangers of disease transmission. The Public Health Council of the State Department of Health of Connecticut has recently revised Regulation 116 of the State Sanitary Code, dealing with drinking-water facilities provided for the public. This revision took effect on December 15, 1937. The revised regulation now definitely provides that in the case of drinking-water facilities made available in schools, hotels, factories, stores, theaters and other places to which the public has access, not only must individual drinking cups or drinking fountains be provided but such drinking fountains must be sanitary.

It is unfortunate that in the period of transition from the old drinking cup to the more modern drinking fountains, the latter in many cases have not been of sanitary type. Vertical jets where the water from the mouths of users falls back on the nozzle have been common and many drinking fountains have been constructed so that the mouths and noses of people using the fountains actually come in contact with the nozzle. Modern approved sanitary drinking fountains are so constructed that slanting jets and guards prevent contamination of the water by users of the fountain. Another failing of drinking fountains in the past has been lack of drainage facilities to prevent fouling.

The new regulation of the Sanitary Code is printed below, as it appeared in a recent publication of the State Department of Health of Connecticut:

Regulation 116.—Sanitary drinking fountains shall be installed or individual drinking cups stored in such a manner as to be protected from contamination shall be provided, where drinking water is made generally available upon the premises of any building, hotel, restaurant, theater, hall, schoolhouse, industrial or mercantile establishment or in any park, street, railroad station, railroad car or ship. Such drinking fountains shall be constructed with a slanting jet issuing from a nozzle of non-oxidizing impervious material with a non-oxidizing guard to prevent the mouths and noses of persons using the fountain from coming in contact with the nozzle. The jet shall be located so as not to touch the guard and shall be discharged at such an angle that the water can neither fall back nor be forced back onto the point of discharge. The fountain jet and all openings in the water-supply piping shall issue above the level of the fountain bowl. The drainage from the bowl shall be adequate and so constructed as to prevent fouling of the bowl. The drain from the fountain shall not have a direct physical connection to a waste pipe unless the drain is trapped. The waste opening and pipe from the fountain shall be of sufficient size to carry off the water promptly. The opening shall be provided with a strainer.

ELEMENTS of PUBLIC SAFETY

GAMEWELL

THREE-FOLD FIRE ALARM BOX

Not more than 500 feet to the nearest box in closely-built residential districts . . . convenient to every group of buildings, manufacturing establishments, and institutions in sparsely-built districts . . . in congested high-value districts—"*A Box a Block*" — with special attention to Life Hazards . . . a safe rule to follow.

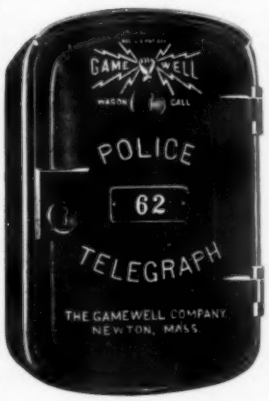
TIME— THE VITAL ELEMENT

Low fire losses do not always indicate the absence of fire hazards. Fires occur in every community and where the means for fire control are efficient and have been so effectively used as to limit the losses to low figures, the community is to be congratulated. But, it should be remembered that the difference between a low and an excessively high per capita fire loss frequently consists of but one or a few large fires. In such cases, there is almost invariably a story of delay in bringing to bear the available fire extinguishing resources.

The function of the fire alarm system is to save time when fire is destroying property. Fire Alarm Boxes adequately distributed and accessible to all citizens provide the means for eliminating delay.

Reliable fire alarm systems are essential to the protection of Life, Property and Business.

EXEMPLAR POLICE BOX



Police Signal Systems provide . . . adequate patrol of policed areas . . . secrecy in police communications . . . prompt assistance in emergencies . . . direct connection with police department for banks, commercial establishments and residences . . . the basic element in communications . . . enabling the police forces to attain the highest degree of operating efficiency.

Write for descriptive literature.

THE GAMEWELL COMPANY

NEWTON UPPER FALLS MASSACHUSETTS

Public Safety

Cleveland Cuts Traffic Fatalities 57½%

But, of the 17 Deaths, 16 Were at Night

By telegraph to THE AMERICAN CITY

TRAFFIC deaths in Cleveland during the first eight weeks of this year were cut from 40 in 1937 to only 17. This remarkable gain in safety was achieved through a comprehensive program of engineering, education, and enforcement organized by Eliot Ness, Director of Safety.

An educational activity, in which the schools and press are cooperating fully, has begun to make Clevelanders safety-conscious. The traffic police are concentrating on patrolling at night, particularly on week-end nights, when in former years a large proportion of the accidents occurred.

Analysis of the 1938 traffic fatalities in Cleveland reveals three startling facts: (1) Of the 17 deaths, 16 were at night; (2) 14 of the 16 night fatalities were pedestrians run down; (3) all 14 of the pedestrians killed at night wore dark clothing. The conclusion is inescapable that poor visibility must have been a large factor in producing such an abnormal proportion of night accidents.

Lighting on most Cleveland thoroughfares supports this conclusion, and replacement of the ornamental but ineffective lantern-type equipments has been recommended by the Cleveland traffic committee (THE AMERICAN CITY, October 1937, page 145). Such improvement of street lighting is included in the safety program, but funds have not yet been appropriated.

Scores of cases are on record where the provision of adequate illumination has reduced night accidents on urban streets and main highways by one-third, one-half, or more. Cleveland's experience is something to give pause to anyone who may doubt the primary effectiveness of good seeing in safeguarding traffic.

How to Prevent House Burglaries

CITIZENS can cooperate with the police by not doing the things which facilitate crime. What these things are is being told them by the Fort Wayne Police Department in a series of articles, the first of which, published in the *Municipal Review* of the City Light and Water Utilities of Fort Wayne, Ind., gives the following rules on how to discourage and prevent house burglaries:

Don't leave a note on the door-bell announcing that you are out and will return at a given time.

Don't leave your door-key under the mat, in the mail-box, or over the door.

Don't pull all the shades of your home when you go out. It is an invitation for thieves to enter.

Don't leave valuables in the house when you go away on a vacation. Thieves can enter any house if they have the time.

Don't go on your vacation without giving written notice of your absence to Police Headquarters. The police are glad to give your home special attention during your absence.

Don't, when entertaining, leave wraps and purses in a rear room on the first floor with the door closed while you entertain in the front of the house.

Don't think an open window is safe from intrusion because it is not near a fire-escape.

Don't allow strangers who represent themselves as gas inspectors, meter readers, sweeper repairmen, etc., into your home without showing proper credentials.

Don't give strangers information regarding your neighbors.

Light and noise are very distasteful to the house burglar. A good watch-dog is better protection than a lock on the door.

A revolver in the hand of a novice is not as good as a shotgun for the protection of the home.

In case of trouble notify Police Headquarters at once—be very exact in giving street and number and all information you possess regarding the crime committed.

Rebate for Safe Drivers

NINE out of ten insured automobile drivers will receive a reduction in rates under the Safe Driver Reward Plan which went into effect February 1 in 27 states and the District of Columbia. At the end of a year from the time a newly-issued policy becomes effective, the holder will receive a money reward of 15 per cent of the premium, provided no loss has occurred under the policy. Insurance rates are also being revised to reflect the latest experience in each territory. Included in the new rates of the 34 members of the National Bureau of Casualty and Surety Underwriters is a factor of 4.8 per cent which is an additional charge upon the driver who has accidents that produce losses.

"We believe the new plan is the greatest single contribution ever made toward promoting individual interest in traffic safety," says William Leslie, General Manager of the National Bureau.

Traffic Signals Save Many Times Cost

A CHECK-UP of 800 intersections in New York City before and after signalizations indicated that New York's 8,000 signalized intersections had reduced accidents by almost 5,000. At $2,000 per accident, an economic waste of $10,000,000 per year is thus prevented by traffic signals costing a grand total of only $750,000 per year.

THOMAS W. ROCHESTER,
Chief Engineer, Police Department, New York City, in *Safety*.

N. Y. STATE POLICE FORD WITH SIRENO, SEARCHLIGHT AND FLOODLIGHT

Motor Vehicle Commissioner Harnett recommends a flashing amber beacon on the roof of patrol cars—and more state troopers

White Police Cars and Lighted Roads

COMMENTING on New York State's 3,065 traffic deaths last year, compared with 2,762 in 1936, Commissioner of Motor Vehicles Charles A. Harnett says: "If we hope to effect any reduction in our rural death rate, we must have more state police specially assigned to highway enforcement. I believe that white police cars equipped with amber blinkers on the roof so they may be easily discerned at night should be used for patrolling purposes. Added to this, we must consider improvements in our highway lighting or the addition of modern highway lighting where none now exists, together with the construction of sidewalks in thickly populated rural areas."

Half the fatalities occurred in communities under 10,000.

Where Water Won't Do It

THERE are certain types of fire which water will not extinguish; indeed, there are certain types of fires which are greatly intensified and increased by water. There are four types of extinguishing materials developed in our laboratories for these special uses. The liquid vaporizing extinguisher is especially recommended for fires in automobiles and motor trucks, and is adapted for putting out fires in oils and greases and in electrical machinery. The chemical solution type is most efficient for fires in free-burning materials such as wood, textiles, rubbish. The foam extinguisher is highly recommended for two types of fire, those in free-burning materials and those in oils and greases. The inert gas type of extinguisher is recommended for fires in electrical machinery and also for oil and grease fires and for automobiles and motor-boats.

C. B. WHITE,
Chief Chemist, American LaFrance & Foamite Industries, Inc., Elmira, N. Y., in a talk to the American Society of Safety Engineers.

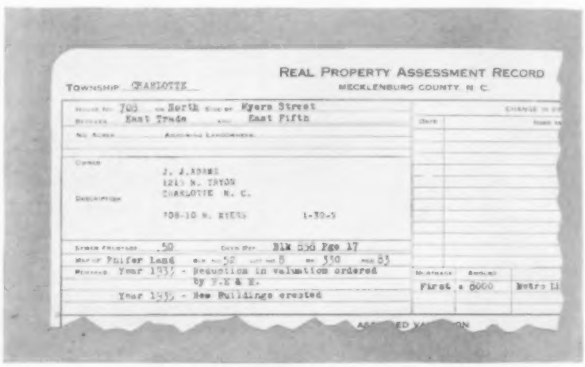
Efficiency in Municipal Offices Builds and Maintains Good Will

Tested Procedure for Record Copying Eliminates Hazards That Lose Time, Money and Citizen Good Will

IN tax offices, street departments, license bureaus, relief agencies, public utility and other municipal departments, copying names and data from original records is necessary and important work. When done by methods which rely on sight and hand motions . . . typing or writing one character at a time . . . the best interests of those responsible for the work are constantly risked. Errors, illegibility and delays creep in, destroying citizen good will, wasting time and money.

Today, more than ever before, citizens appreciate the benefits resulting from efficient procedures in municipal offices. In hundreds of communities, they are familiar with the benefits received through the accuracy, legibility, speed and economy of Addressograph methods used in copying name and data records in municipal departments. Evidence of their approval has frequently been expressed at the polls.

Actual photograph showing portion of tax assessment record for Charlotte, N. C., *before* Addressograph methods were adopted. Recording was slow and difficult. Errors and omissions were numerous.


REAL PROPERTY ASSESSMENT RECORD
TOWNSHIP CHARLOTTE
MECKLENBURG COUNTY, N. C.
J. J. ADAMS
1213 N. TRYON
CHARLOTTE N. C.
Year 1931 - Reduction in valuation ordered by T.X & R.
Year 1931 - New Buildings erected

Portion of tax assessment record card used by same municipality *after* Addressograph methods were put in use. Complete, legible and accurate records such as this make Addressograph a profitable investment for any municipal office.

Addressograph Methods Offer These Important Advantages

- Original records are low-cost metal typing units which serve as authentic reference file and transcribing medium combined.
- Mistakes are eliminated through predetermined accuracy . . . constantly maintained regardless of who does the work.
- Legibility is assured with ribbon-print impressions equalling best typing . . . clear carbon copies can be produced automatically.
- Office routine is simplified. Time is saved by copying entire record or any part with one motion instead of many. Peak loads are leveled . . . no need for temporary employees.
- No specialized training is necessary. Any employee quickly learns to use Addressograph methods.

Take Advantage of FREE Counsel and Advice

Learn more about Addressograph methods, in use for more than 40 years and endorsed by public officials everywhere. A capable representative will analyze your name and data copying problems and offer recommendations based on the successful experience of other municipalities. Consult principal city telephone books for address of nearest Addressograph Sales Agency. Or, write direct to Addressograph-Multigraph Corporation, outlining particular kind of work in which you are most interested.

ADDRESSOGRAPH-MULTIGRAPH CORPORATION

Cleveland, Ohio

Addressograph-Multigraph of Canada, Ltd., Toronto

Sales Agencies in All Principal Cities

MARCH, 1938

Vol. LIII, No. 3

The American City

470 Fourth Avenue
New York

35 Cents, $2 a Year

Sewage-Treatment Projects on Lower Fox River, Wisconsin

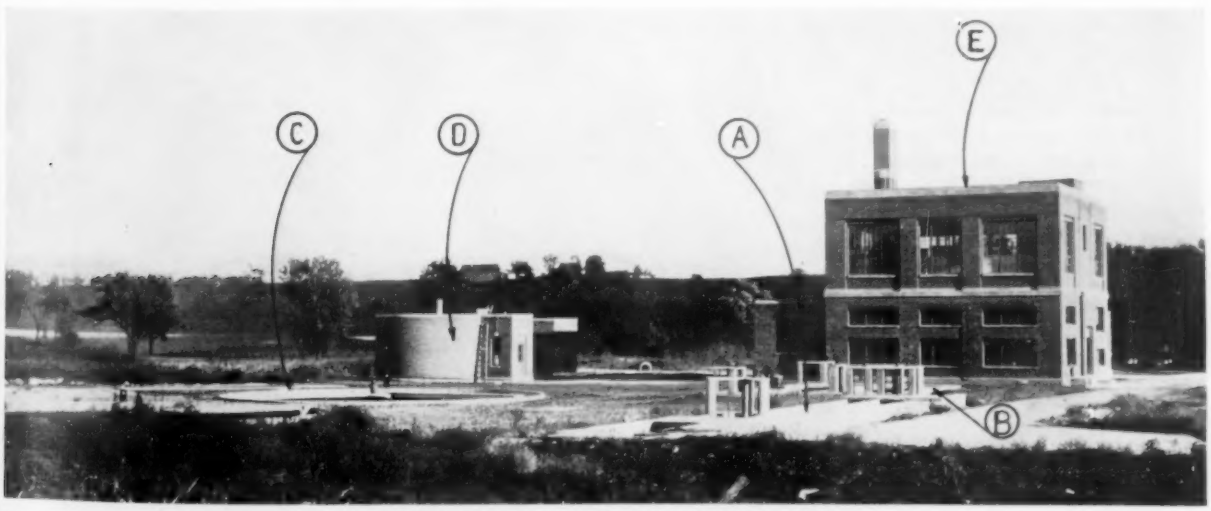
Progress of Cleaning Up 38-Mile Waterway Reported

By SAMUEL A. GREELEY
Greeley & Hansen, Consulting Engineers, Chicago, Ill.

IN THE AMERICAN CITY of May, 1936, an article appeared describing the completed and projected sewage-treatment projects along the lower Fox River in Wisconsin. Since that time the projects for Kaukauna, Appleton and Neenah-Menasha have been completed, and tuning-up for routine operation has started. The lower Fox River is a waterway about 38 miles long extending from Lake Winnebago to Green Bay. Along the river above Green Bay are the cities of De Pere, Wrightstown, Kaukauna, Combined Locks, Little Chute, Kimberly, Appleton, Menasha and Neenah, with a total population of about 60,000. Except for Kimberly and Combined Locks, sewage-treatment projects have been, or are about to be, completed in all these cities.

The drainage area of the lower Fox River above Rapide Croche, just a few miles below Kaukauna, is 6,150 square miles. The waterway includes Lake Winnebago, the outflow of which is controlled to a certain extent by gates in the dams at Neenah and Menasha. The natural channel of the river has been changed by the construction of a canal along its margin, by dredging portions of the old channel, and by the construction of dams and mill-races. The total fall from Neenah to Kaukauna is 143 feet, most of which has been developed for water power by the construction of nine dams.

A number of more or less routine gagings since 1917 indicate that a flow of 1,300 c.f.s. or more is likely to occur for 90 per cent of the time. The rate of flow which occurs half the time is 4,000 c.f.s. Since 1896 a flow of less than 1,000 c.f.s. has occurred only once. From the viewpoint of stream pollution an important characteristic of the river is the pooling effect of the dams.



THE KAUKAUNA, WIS., SEWAGE-TREATMENT PLANT

(A) Screen and grit chamber. (B) Flocculation tank. (C) Two circular settling tanks. (D) Sludge storage tank and control chamber. (E) Main building for the offices, laboratory, sludge- and garbage-disposal equipment, and chemical storage

Oxygen Balance of River

Beginning in 1931, the Wisconsin State Board of Health and Greeley & Hansen have made five river surveys during the summer and fall to ascertain the oxygen balance of the river. These surveys indicated that the greatest reduction in the dissolved oxygen occurred in the stretch of the river just below Kaukauna, where, with river flows of 2,000 c.f.s. or less, the dissolved oxygen was reduced to below 2.0 parts per million.

The river surveys and oxygen balances further indicated the pollution load. For the stretch of river from Neenah to a point below Kaukauna a population equivalent of 800,000 was estimated, depending, of course, upon the amount of work going on in the industries. There are along this stretch of the river 21 pulp and paper mills producing liquid wastes, which comprise in the main sulphite wastes, white water, rag-pulp rotary liquor and wash water, de-inked paper wash water, sulphate pulp liquors, strawboard wastes and the like.

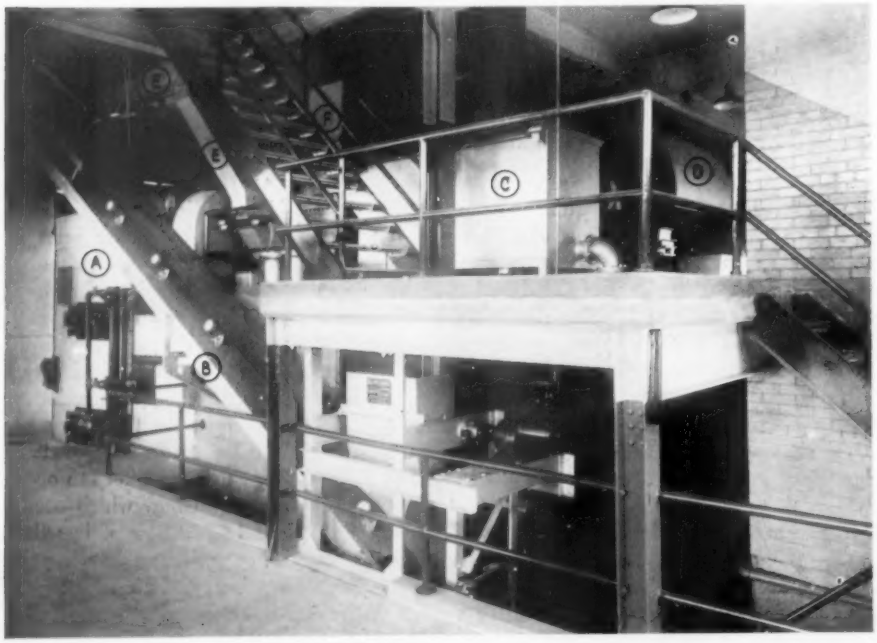
The sewage-treatment projects described below are those at Kaukauna, Appleton and Neenah-Menasha. They represent a total expenditure of a little under $2,000,000, of which 55 per cent was contributed by the municipalities through general obligation bonds and 45 per cent by PWA.

The Treatment Plants

The sewage-treatment plant at Kaukauna is designed for 7,500 people plus an allowance for industrial sewage, and has a nominal capacity of 4.0 mgd. The construction cost of the project is about $304,000, of which $177,000 was spent for the treatment plant. The intercepting sewers comprise 14,000 feet of pipe with diameters from 12 inches to 33 inches, of which 3,000 feet was built in the channels of the river.

The sewage-treatment plant comprises a screen and grit chamber, a flocculation tank, two circular settling tanks, a chlorination tank, a sludge storage tank and control chamber, together with a main building for the offices, laboratory, sludge- and garbage-disposal equipment, and chemical storage. Because of the relatively large amount of industrial sewage, it was considered that the sludge would not be readily amenable to digestion, and therefore equipment for mechanical dewatering and incineration of raw sludge was included. The incineration equipment was furnished by the Nichols Engineering and Research Corporation.

The sewage-treatment plant at Appleton is designed for 32,500 people plus an allowance for industrial sewage, and has a nominal capacity of 10.0 mgd. The construction cost of the project is about $625,000, of which $297,000 was spent for the treatment plant. The intercepting sewers are constructed along both sides of the river, with diameters from 15 inches to 45 inches. Included is a river crossing 950 feet long, comprising one pipe 15 inches and another 30 inches in diameter, built 12 feet below standard low water to accommodate navigation.

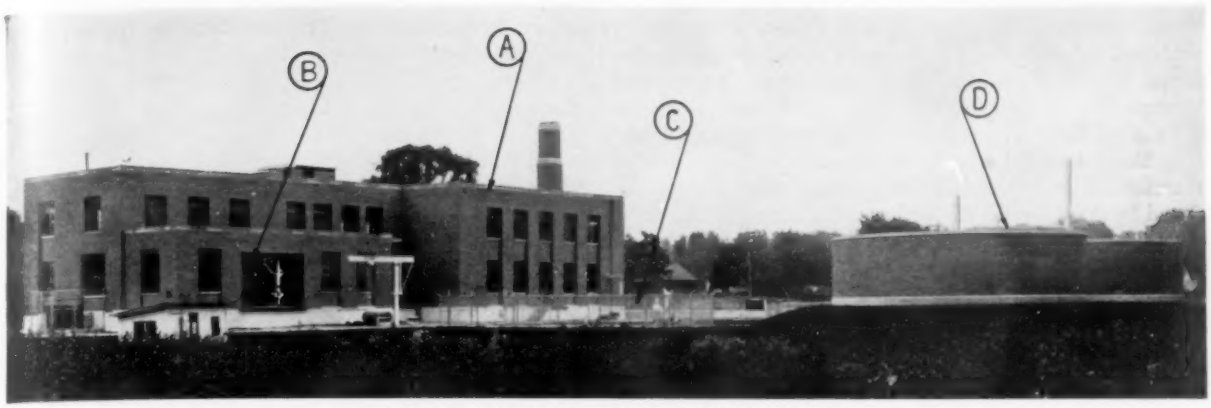


SLUDGE-DISPOSAL EQUIPMENT OF THE KAUKAUNA PLANT

(A) Furnace. (B) Filter cake conveyors. (C) Sludge-conditioning tank. (D) Filter. (E) Garbage chute. (F) Sludge elevator

The sewage-treatment plant comprises a screen and grit chamber, a chemical house, a flocculation tank, two circular settling tanks, a contact tank for chlorination with effluent control valves, and an office and laboratory building, together with sludge digestion tanks and open sludge drying beds. A stairway leads from the sewage-treatment structures to the sludge-disposal structures. The treatment plant is located on the south side of the river below the city where a site of sufficient width was available in the relatively confined valley. It was necessary, however, to locate the sludge-disposal structures on the top of the bluff some 40 feet above the lower portion of the site. It was considered in this project that the mixed domestic and industrial sludge would be amenable to digestion.

The Neenah-Menasha sewage-treatment plant is designed for 25,000 people plus an allowance for industrial sewage and has a nominal capacity of 10.0 mgd. The construction cost of the project is about $881,000, of which approximately $375,000 was spent for the treatment plant. The intercepting sewers comprise 36,000 feet of pipe with



THE NEENAH-MENASHA SEWAGE-TREATMENT PLANT

(A) Main building for the screens, pumps, offices, laboratory, chemical storage, chlorination equipment, electrical equipment and sludge-disposal equipment. (B) Grit chamber. (C) Chlorine storage yard and handling crane. (D) Sludge tanks and control house

diameters from 18 inches to 36 inches, of which about 10,000 feet was built in the channels of the river.

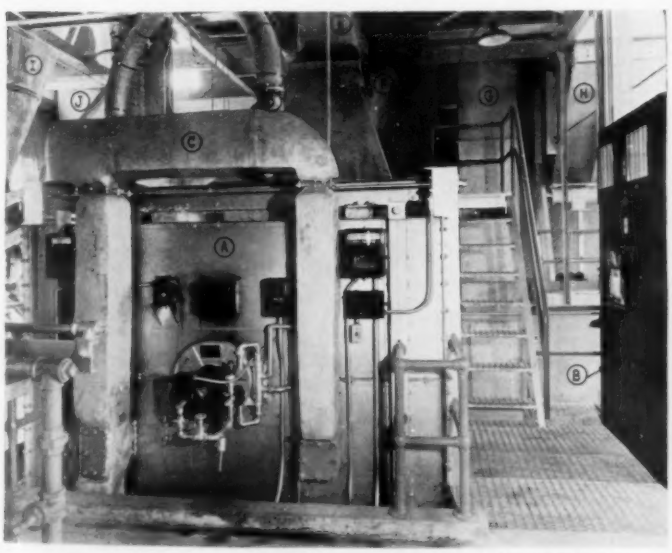
In Neenah-Menasha it is necessary to pump all the sewage, the pumps being housed in the north end of the main building. Ahead of the pumps are fine screens with a screenings grinder. Just following the pumps is a grit sump or chamber which is relatively small because the sewers in the two cities have been changed to operate as separate sewers. In addition, the sewage-treatment plant comprises a flocculation tank, two circular settling tanks, sludge-storage tanks and control house, together with a main building for the screens, pumps, offices, laboratory, chemical storage, chlorination equipment, electrical equipment and sludge-disposal equipment. It was considered desirable at Neenah-Menasha to provide equipment for mechanical dewatering and incineration of raw sludge. The incineration equipment was furnished by Combustion Engineering Co.

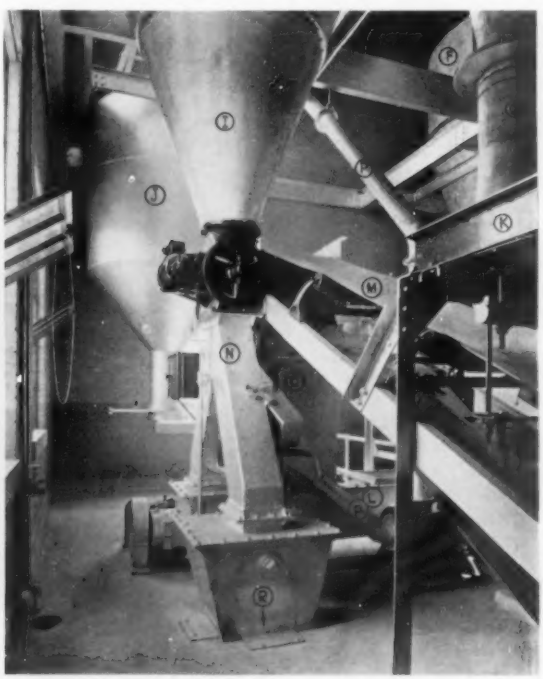
Sludge-Disposal Equipment

The sludge-disposal equipment at the Kaukauna plant comprises an elevator, a conditioning tank and a filter for the wet sludge, a filter cake conveyor and a furnace for the incineration of the sludge cake and garbage. Provisions are made at this plant for grinding garbage and delivering it to the incinerator with the dewatered sewage sludge. The nominal capacity of the sludge dewatering and incineration equipment at Kaukauna is 10 tons of dry solids in 22 hours.

Sludge-disposal facilities at the Neenah-Menasha plant comprise a sludge well, a bucket elevator, a conditioning tank, two sludge filters, filter cake conveyors, a sludge dryer, the furnace for the incineration of the dried sludge, screw conveyors and a bucket elevator for removal of ash from the furnace and stack, and an ash-storage hopper arranged with a screw conveyor and chute for loading stored ashes directly into trucks.

The liquor level in the sludge well is controlled by an





THE SLUDGE INCINERATION EQUIPMENT AT THE NEENAH-MENASHA PLANT

(A) Incinerator. (B) Temperature indicator and recorder instrument panel. (C) Secondary air duct. (D) Sludge burner. (E) Preheater. F) Ash cyclone. (G) Ash conveyor. (H) Ash storage bin. (I) System cyclone. (J) Dry sludge storage bin. (K) Weightometer. (L) Sludge mixer. (M) Filter cake conveyor. (N) Dry sludge splitter. (O) Sludge drier chute. (P) Dry sludge storage ducts. (Q) System duct-driver to cyclone. (R) Duct to sludge burner

automatically operated gate-valve in the line supplying sludge to the sludge well in the main building. The sludge liquid level in the tubs of the vacuum filters is controlled through an automatically operated variable-speed drive for the sludge elevator. Paddle agitation is provided for the conditioning tank having a drive common to the sludge elevator. The ferric chloride and lime feed devices are paced by the drive for the sludge elevator and agitator.

The installation includes two Filtration Equipment Corporation vacuum filters. The filter cake conveying system is equipped with a Weightometer scale. The sludge-drying and incineration equipment is of Combustion Engineering Co. manufacture.

The sludge-drying equipment includes a sludge mixer for the filter cake and dried sludge, a rotary flash sludge drier, an air conveying system from the drier to a system cyclone which separates the dry sludge and vapor, and a dry sludge storage bin. Dry sludge from the cyclone is passed through a "splitter" which automatically meets the demand of the sludge mixer for dried sludge and routes excess dried sludge to the incinerator. Vapor from the system cyclone is passed through the furnace for deodorization.

The furnace is of the type commonly used for the burning of powdered coal. The drying and incineration system is brought up to proper temperature, and supplemental heat is supplied by means of a gun type oil burner.

Furnace gas is passed through a preheater which, in turn, supplies hot air to the sludge drier and thence through an ash cyclone in which the fly ash is separated from the gas. The gas is exhausted to the stack.

A screw conveyor is installed along one side of the furnace in front of the ash-pit doors, into which furnace ash can be raked. The screw conveyor discharges into a bucket elevator at a point common to the chute from the ash cyclone. The bucket elevator lifts the ash to a horizontal screw conveyor which distributes it to the several compartments of the ash-storage hopper. The storage hopper has a capacity of 1,300 cubic feet, which at present is adequate for storage of ash for a week's operation of the furnace.

All the sludge dewatering and incineration equipment is housed in a common room in the main building of the plant. The ash-removal conveyor and chute extend through the exterior wall of the building to allow discharge of stored ash directly into trucks. The nominal capacity of the sludge dewatering and incineration equipment is 16.5 tons of dry solids in 22 hours.

The rated capacity of the sludge incinerator at the Neenah-Menasha plant is 16.5 tons in 22 hours, and of the incinerator at Kaukauna 10 tons in 22 hours, both as dry solids.

The sewage-disposal project at Appleton has been in operation for about 9 months, and those at Kaukauna and Neenah-Menasha for 3 months of trial operation.

Cooperative Efforts

The Kaukauna and Appleton projects were administered by the Board of Public Works of each city. Because Neenah and Menasha are adjacent to each other and have common interests, a special act of the Legislature created the Neenah-Menasha Sewerage Commission for the administration of the joint project. Each of these two cities has shared equally in the cost of the sewage-treatment plant, joint sewers, engineering and other overhead costs. Each city has paid for sewers provided for its use.

Throughout the development of these projects, the City Engineers, Anthony Prunuske of Neenah, A. E. McMahon of Menasha, L. M. Schindler of Appleton, and F. M. Charlesworth of Kaukauna, have joined in and cooperated with the engineering work.

Taxes and Land Values

THE attention of American advocates of the British system of real estate taxation is invited to a letter which appeared in the *Manchester Guardian* of November 1, 1937, advocating a more rational method of raising local revenues than is now in effect in either England or the United States. Of the signers of the letter—George Lansbury, Sir Stafford Cripps, Andrew MacLaren, R. R. Stokes and Leonard Woolf—the first three are Members of Parliament. The letter follows:

"We do not see why the municipal reformers here should do all the talking about rates. May we put our views before your readers?

"First, we consider that the present rates [local taxes] should be abolished. They penalize the householder, cripple enterprise, and encourage the speculator. What is more, they are unnecessary. The expenditure of public moneys on social services actually creates a fund ample to meet the cost of these services. This fund always appears in the market value of the land. It is created by the community and should be enjoyed by the community. Existing machinery could be used for its collection by imposing a rate on the market value of land, not including the value of buildings, works, tillage, and other improvements. This should be progressively increased until it replaced existing rates.

"See the difference. The present rates fall entirely on the use to which the property is put. If the site is in use and fully developed, the rates are at a maximum, however bad business may be. If the buildings are empty or the site idle the rates will be nil, however great a value social activity has given to the site. Thus before the London County Council acquired certain land in Lambeth for housing, the land and such buildings as were on it were together valued for the rates at £199. Such was the true value of the site that the Council paid £30,700 for it. Again, since the war the L.C.C. has purchased land for educational purposes at a price of £67,635, the total value of which for rating purposes was nil.

"Every year the local authorities pay large prices to speculators for land needed by the public on which little or nothing has been paid in rates. Let such sites be rated at their market values instead of the fictitious value based on usage, and a huge fund will become available to relieve the present ratepayers. Then all rates could be removed from houses, offices, shops, factories, etc., and the community need only take from each individual what the community creates, the value of the land which he is holding.

"Since the rates would be levied on the value of sites whether in use or not, it would be unprofitable to keep land idle and buildings empty. Inflated rents would drop, owing to competition for tenants, and the enormous price of 'agricultural' land in the heart of our boroughs would fall until there was a user."

ST. PAUL'S RIVER FRONT IN 1925, LOOKING EASTERLY
For recent views, see next page and front cover

Replanning Moves Forward in St. Paul

By GEORGE H. HERROLD
Engineer, The City Planning Board, St. Paul, Minn.

ST. PAUL is gradually becoming a replanned city. This has been brought about through the activity of a City Planning Board, organized in 1919, and provided with a staff and consultants in 1920 and an appropriation of $50,000 for a two-year study of the city's need.

Each year some worth-while project has been presented, approved and carried out. In 1928 a $16,000,000 bond issue was approved by the voters to expedite the necessary changes, and this appropriation has served as a buffer to the depression, which did not reach St. Paul until two years later than in other parts of the state.

Among the improvements carried out in recent years by the city is the development of old Third Street, now known as Kellogg Boulevard. Third Street was a marginal street running along the top of the sandstone bluff which forms the river front, with Second Street and the levee between it and the water. The business district of St. Paul was laid out in 1849 and was similar to the business district of St. Louis. Some of the streets were as narrow as 43 feet, and 60 feet was considered a wide street. With the advent of the automobile, the street floor space in the retail district, which had a ratio of street to block area of 29 : 71, has had to be changed. It is now gradually approaching a desired ratio of 35 : 65. In 1870, Third Street was widened from 43 to 57 feet. In the last few years, under a city planning program, it has again been widened, to 129 feet, and the area lying between the street and the top of the bluff has been turned into a parterre. In developing Third Street into a wide marginal thoroughfare skirting the retail and wholesale district, a distributor was created for all the streets in the district. In order to make this distributor of city-wide value, a viaduct costing $850,000 was built to the east, and at the west a ramp was constructed to carry traffic down from the business district to a lower level, where the street system quickly takes care of it.

Cut out of the sandstone bluff paralleling Third Street is old Second Street, running down to the steamboat landing. Over this street was hauled by dog-sled and ox-cart every piece of freight and all food and whiskey that went into the development of Minnesota and the Northwest Territory prior to the coming of the railroad. The parterre is extended out over Second Street in order to give it width, this extension being carried on columns along the outer edge of Second Street.

Benefit Assessments

Because Kellogg Boulevard acted as a distributing street to the retail district, the retail district was assessed for the cost of acquiring the land and buildings along the street; $1,220,000 was the cost of this property, and the assessments were graduated down from Kellogg Boulevard to Fourth Street, Fifth Street, Sixth Street and Seventh Street; Seventh Street property owners paying $10 per front-foot assessment. The physical improvements were paid for by assessment and a bond issue. The entire cost of the Kel-

DEMOLITION IN PROGRESS ALONG ST. PAUL'S RIVER FRONT
Second Street is on the left; Third Street on the right. The buildings in the background were yet to come down when the picture was taken

ST. PAUL'S NEW RIVER FRONT

The buildings on the river side of Kellogg Boulevard compose the largest law-book publishing company in the world. The divided roadway had to be omitted at this point, and with parking regulations the apparent bottleneck is relieved. The ramp recently completed is in the left foreground

logg Boulevard improvement to date, exclusive of the viaduct, was $2,746,000. The western end with ramp is just completed. This cost $700,000 and was paid for from a bond issue.

In St. Paul the Planning Board is an advisory body. Plans are prepared from basic studies and submitted to the governing body. When approved, the plans and specifications are prepared by the Chief Engineer, and the construction work is carried out by the construction department under his supervision.

St. Paul has now turned its back yard into its front yard. Along Kellogg Boulevard are the following service buildings: The Union Depot, Federal Building, City Hall and Court House, Women's City Club, Telephone Building, Hill Reference Library, Public Library, Minnesota Club, and St. Paul Auditorium. The Union Depot was constructed in 1918. All the other buildings have recently been built.

Regulation of Curb-Cuts in Business Districts

SOME restriction of vehicle movements across sidewalks in busy retail districts of cities appears to be within the range of police power. Applications for curb-cuts in busy trading areas where the sidewalks are well filled with pedestrians during the greater part of the day should receive careful consideration by such authority as a zoning board of appeals.

In American cities, retail stores are commonly served from alleys in the rear, which are entered from cross streets, or, if the store is served from the front, the movement of freight, etc., across the walks of the principal street is infrequent. Now comes the period when some of the older store buildings are torn down and replaced by gasoline filling stations, general automobile service stations or parking lots. These, or any uses resulting in a more or less constant travel of motor vehicles across the crowded walks of a busy retail street, make serious hazard to pedestrians. They slow up vehicular traffic on the principal street, with its consequent dangers of collision with cars and trucks that are turning in or out of the premises.

Gasoline filling stations are the principal offenders at present. A station with two entrances from the street destroys parallel parking for four to six cars and so is a serious detriment to nearby business and to the public in general. The problem of restriction of these abuses can most logically be approached on the basis of limitation of motor-vehicle entrances across sidewalks on principal streets in busy commercial areas.

Cost of Snow Removal in Superior, Wisconsin

By T. M. BASTERASH
City Engineer

THE city of Superior covers an area of 42 square miles and is divided into six very definite parts, each having its small business section, with a large business section in the downtown area. There are 161 miles of streets within its incorporate limits, which are all cleared of snow by plowing if the time permits. There are also 183.5 miles of sidewalk to be snow-plowed.

During the winters of 1935-36 and 1936-37 we had 51.2 inches and 51.9 inches of snowfall respectively. While this is not an unusual amount, it has come in short periods of time during blizzards and caused considerable inconvenience.

In the summer of 1935 the local street-car company changed from the use of trolley cars to motor buses. This forced an additional snow-removal load onto the city, since the street-car company snow-plows were no longer in use. Because the city was financially unable to purchase more snow-removal equipment to replace those facilities formerly furnished by the street-car company, traffic was tied up for several days after some of the most severe storms. The following year an appropriation was placed in the budget for the purchase of additional equipment. It will be noticed in the tabulation of expenses that the cost with the new equipment is considerably larger. While this is true, it is also true that much better traveling facilities were provided for the public.

Trucks Nos. 1, 2, 3, and 4 are all 2½-ton trucks. No. 1 is equipped with a Wausau one-way push-plow. Nos. 2, 3, and 4 are equipped with V-type Sargent plows with wings. Nos. 8 and 10 are of 1½-ton capacity, and both are equipped with a Wausau one-way push-plow. Trucks 5, 6, 7, and 9 are used to haul snow when necessary and are not

COST OF SNOW REMOVAL FROM NOVEMBER 9, 1935, TO MARCH 16, 1936, INCLUSIVE

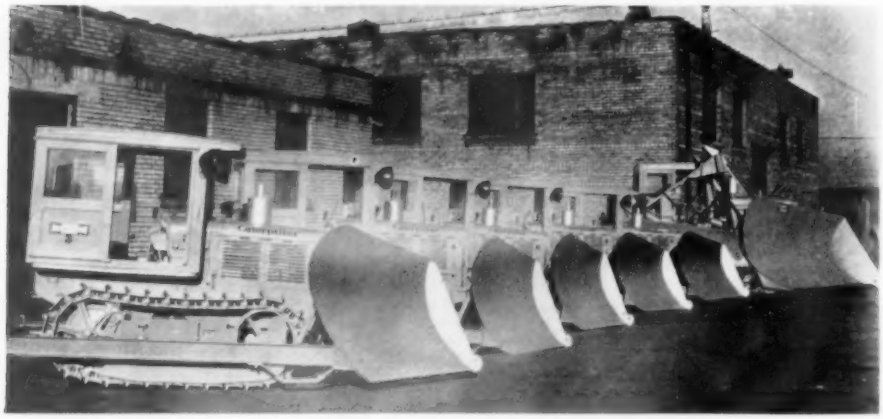
Unit	Hours	Wages	Gas Gals.	Gas Cost	Oil Qts.	Oil Cost	Grease Lbs.	Grease Cost	Cost of Repair Pts.	Tot. Cost per unit	Cost per hr.
Truck No. 1*	503	$314.48	707	$104.97	103	$15.45	1	$0.15	$38.13	$473.18	$0.94
" 2	477	298.11	761	112.65	58	8.71	4	0.60	24.20	444.27	0.93
" 3	488	305.33	667	98.47	34	5.10	8	1.20	71.22	481.32	0.99
" 4	366	228.75	725	106.30	34	5.10	81	12.15	58.45	410.75	1.12
" 5	135	84.52	115	16.78	1	0.15				101.45	0.75
" 6	293½	187.87	203	30.17	3	0.45				218.49	0.75
" 7	170	106.24	138	19.94	3	0.45				126.63	0.74
" 8	126	78.75	93	13.65	5	0.75				93.13	0.74
" 9	227	141.87	250	37.09	54	8.10	3	0.45	55.22	242.73	1.07
" 10	274	171.15	296	33.87	22	3.30			45.65	253.97	0.93
Road patrol No. 1	511	319.36	498	74.32	19	2.85			55.39	451.92	0.90
" 2	636	396.99	714	106.41	2	0.30			25.75	529.45	1.10
Tractor No. 1	100	62.50	90	18.15	26	3.90	1	0.15	25.47	110.17	0.83
" 2	280	175.00	459	84.80	26	6.50			75.00	341.30	1.10
" 3	242	151.25	258	42.95	114	17.10			10.99	222.29	1.22
" 4	260	162.50	369	55.06	101	15.15	2	0.30	44.82	277.83	0.92
" 5	554	346.15	810	120.51	85	12.75	10	1.50	113.12	594.03	1.07
" 6	243	151.87	335	57.43	64	11.35			50.35	271.00	1.11
" 7	287	179.37	497	99.40	30	6.00			35.37	320.14	1.12
" 8	309	193.12	625	129.59	69	10.35	6	0.90	25.99	359.95	1.16
Loading snow labor	6,095	3,047.50								3,047.50	0.50
Ward labor	6,309	3,154.50								3,154.50	0.50
Shop & garage	300	281.93								281.93	0.94
Snow-plow repairs									254.74	254.74	
Cross chains									160.90	160.90	
TOTALS	19,185	$10,539.11	8,610	$1,362.49	853	$133.81	116	$17.40	$1,170.76	$13,223.57	

*Truck No. 1 is a GMC; all others are Internationals.

COST OF SNOW REMOVAL NOVEMBER 6, 1936, TO MARCH 15, 1937, INCLUSIVE

Unit	Hours	Wages	Gas Gals.	Gas Cost	Oil Qts.	Oil Cost	Grease Lbs.	Grease Cost	Repairs Pts.	Total Cost	Cost per hr.
Truck No. 1	366	$241.56	398	$29.82	47½	$7.60	27	$3.32	$152.54	$434.84	$1.19
" 2	772	509.52	1,015	152.55	147	23.52			189.31	874.90	1.13
" 3	760	501.60	1,132	170.14	73	11.68			70.24	753.66	0.99
" 4	547	361.02	1,220	183.37	104½	16.72			102.55	663.66	1.21
" 5	497	328.02	456	68.54	41	6.56			36.00	439.12	0.88
" 6	620	409.20	360	54.11	21	3.36			35.90	502.57	0.81
" 7	552	364.32	342	51.40	16½	2.64			20.02	438.38	0.79
" 8	509	335.94	333	50.05	19	3.04			30.64	439.67	0.86
" 9	322	212.52	362	54.41	29	4.64			44.52	316.09	0.98
" 10	854	563.64	893	134.22	65	10.40			53.21	761.47	0.89
Road patrol No. 1	646	426.36	901	135.42	11	1.76			127.96	691.50	1.07
" 2	608	401.28	830	124.75	13	2.08			48.98	577.09	0.95
60 hp. diesel	218	143.88	460	66.54	35	5.60			4.75	220.77	†1.54
Tractor No. 1	30	19.80	35	5.26	8	1.28				26.34	‡0.88
" 2	710	443.75	766	148.80	67	10.81	½	0.08	26.37	629.81	0.89
" 3	714	446.05	751	141.92	31	7.75	½	0.08	55.69	651.49	0.91
" 4	494	308.75	518	99.87	47½	9.63	21	3.36	25.94	447.55	0.91
" 5	505	315.62	530	89.45	19	3.22	½	0.08	23.69	432.06	0.86
" 6	483	301.87	507	85.49	19	3.04	½	0.08	23.69	414.17	0.86
" 7	385	240.62	404	66.49	24	3.82			108.91	419.84	1.09
" 8	483	301.87	507	95.82	19	5.04			78.11	480.84	1.00
" 9	536	335.00	563	101.77	33	6.65			25.94	469.36	0.87
" 10	8	5.00	28	3.99	4	0.64				9.63	‡1.20
" 11	297	196.02	708	115.61	45	7.20			277.79	576.62	†2.46
Helpers on plows	2,137	1,121.92								1,121.92	0.52½
Loading snow-labor	14,602	7,301.00								7,301.00	0.50
Ward labor	13,578	6,788.96								6,788.96	0.50
Shop & garage	683	450.78								450.78	0.66
Tools									102.82	102.82	
Snow-plow repairs									525.34	525.34	
TOTALS	42,916	$23,375.87	14,082	$2,229.79	939	$158.68	50	$7.00	$2,190.91	$27,962.25	

†Includes helper. ‡Scraped.



THE FLEET OF TRACTORS AND SNOW-PLOWS THAT CLEAR THE STREETS OF SUPERIOR, WIS.

equipped with plows.

We have one Caterpillar Sixty diesel tractor equipped with a V-type LaPlant-Choate plow with wings that is used for all heavy work. Tractors 1 to 6 inclusive are all gasoline Caterpillar Twenty-Two's equipped with V-type Balderson plows. Tractors Nos. 7 and 8 are both International T-20's equipped with V-type Sargent plows. These small tractors numbered 1 to 8 inclusive are used to plow sidewalks in the various wards and operate under the direction of the ward foremen. All the other equipment, including the two Adams road patrols, operates under the direction of the Street Department.

Say It with Pictures

AS a contribution to the traffic-safety cause, the New York *Daily News* has reprinted in a 6½ x 5-inch booklet 25 cartoons by C. D. Batchelor that have appeared under the title "Inviting the Undertaker." They are suggested as of possible use to some municipalities in their safety education program and are available at 1.7 cents each for 5,000, and at a still smaller price in larger quantities. Two of the cartoons are reproduced here.

New Sewerage System and Treatment Plant

Construction and Operation of Leeds, Ala., Project Financed by Revenue Bonds Retired by Sewer Rentals

By J. W. GOODWIN Assoc. M., Am. Soc. C. E.
Consulting Engineer, Birmingham, Ala.

FOR many years the city of Leeds, a municipality in Alabama, desired the convenience of a sewer system and a modern sewage-treatment plant but no way could be found to finance the project, because of the debt limitation set by the state constitution at 8 per cent of assessed valuation and bonded indebtedness outstanding. In March, 1933, the Alabama Legislature enacted a revenue bond law, Act 102 General Laws of Alabama, which gave municipalities the right to issue revenue bonds to construct and operate sewerage systems and treatment works and charge a sewer rental. The bonds issued for this purpose are not a general obligation of the municipality and are not charged against their debt limitation, and are secured only by a first mortgage on the system pledging the revenue derived from the system after the operating cost for payment of the principal of and interest on the bonds. The Act further provided that bonds could be issued for a period of thirty years but must fall due serially, the first bond maturing not later than five years after issuance, and no amount maturing in any one year may be more than two and one-half times the smallest prior maturity.

In February, 1935, the City Council employed the writer to make the surveys, estimates, and designs, and file an application with the Public Works Administration for a loan of $55,000 and a grant of $45,000 to provide funds to construct the project, the loan to be secured by 4 per cent sewer revenue bonds. It was found, based on the present population of 3,000 people, that there were 500 potential customers consisting of business houses, residences, schools, etc., now in Leeds which could connect at once. Based on making a monthly service charge of $1 per customer, it was found that the project would be self-liquidating after allowing ten years to connect all the present customers, and would pay operating cost, interest, and retire the bonds in 30 years, with a surplus of approximately $40,000, not allowing for any new customers or increase in population. And with the population increasing yearly, a much larger surplus would be built up for extensions and improvements.

THE NEW SEWAGE-TREATMENT PLANT AT LEEDS, ALA.

(1) The bar screen. (2) The pump-house. (3) The primary clarifier. (4) The trickling filter. (5) The final settling tank. (6) The digestion tank. (7) The sludge drying beds

The project was approved by the Public Works Administration in August, 1936, and work was begun October 1, 1936, and completed on June 10, 1937.

The Sewerage System

The city now has a sewerage system of approximately 46,000 linear feet of pipe lines discharging into a complete sewage-treatment plant which at the present time is considered by the State Health Department as the most modern plant in the state, and will carry treatment further than any other plant in the state. This was necessary because the point of discharge of the outfall sewer from the sewage-treatment plant was into Little Cahaba River, which empties into Lake Purdy, eight miles below, which is the source of water supply for the city of Birmingham. The average flow of Little Cahaba River is 10 million gallons per day, and the storage capacity of Lake Purdy about 5 billion gallons. Because of the natural purification that will take place and the treatment of the sewage at this plant, the water supply will not be affected. The water taken from Lake Purdy for use by the city of Birmingham is also treated, which is an additional safeguard.

The cost of the project was $70,000 for the collection system and outfall sewers, and $30,000 for the treatment plant.

The Treatment Plant

The treatment plant is of the separate sludge digestion type consisting of the following units:

1. Hand-cleaned bar screen.
2. Pump-house, housing two Fairbanks Morse sewage pumps, one 200-gpm and one 500-gpm, both float controlled, one Barnes-Dorrco sludge pump with a time clock control, and one Wallace & Tiernan chlorinator for sterilizing either the raw sewage in the pump sump or the filter effluent or both.
3. Primary clarifier, mechanically cleaned, Dorr type.
4. Filter with rotary distributor, Dorr type.
5. Final settling tank.
6. Digestion tank.
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The plant was designed for an average flow of 300,000 gallons per day and a maximum flow of 700,000 gallons per day.

The primary clarifier was designed for a two-hour detention period, the final settling tank for a 1½-hour detention period and the digester for 3 cubic feet per capita. The digestion tank will not be heated at this time, but provisions were made to add the heating plant later if found necessary.

The filter was designed for 2,000,000 gallons per acre per day, and the sludge drying beds were designed for 1 square foot per capita.

City water was piped to the plant, and a working pressure of 50 pounds is available at each unit of the plant for operation and cleaning up around the plant and grounds.

Efficiency

By proper operation, it is believed that the plant will discharge an effluent which will reduce the bacteria over 99 per cent and will give over 90 per cent reduction in biochemical oxygen demand. The system was officially dedicated on June 17, 1937, and put into operation. Attending the dedication were many high government officials. The citizens of Leeds are greatly pleased with this new safeguard to the public health of their city, and the dedication was attended by some 2,000 people.

It is believed by many government officials that the Leeds project will be a model undertaking for other municipalities to follow, and is the beginning of a new era of financing the construction of sewers and sewage-treatment works in Alabama, placing the burden of construction and operating cost where it should be—on the users of the sewer systems instead of on the General Fund, which is made up from all taxes.

Federal Programs Benefit South Milwaukee

To the Editor of THE AMERICAN CITY:

Your February issue has an article entitled "From Better to Best."

In South Milwaukee we have had various improvements partly financed by PWA and WPA that otherwise would have had to wait until we could finance them. These include:

A $250,000 storm sewer, badly needed in South Milwaukee in the business district, for which we received a 45 per cent grant under PWA.

A central sewage-disposal plant at a cost of $125,000, with a 45 per cent grant by PWA, eliminating dumping of raw sewage into Lake Michigan, a nuisance prevalent in South Milwaukee for many years.

A police and fire-alarm system at a cost of $32,000, with a 45 per cent grant by PWA, thus improving the service, with additional fire and police protection.

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H. W. DAEHLING,
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THE ANTENNA

Jersey City's Pioneer Two-Way Police Radio

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ON THE LINOLEUM

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While the one-way system was in use in a number of police departments, Jersey City officials waited for the two-way system to be perfected, and then they equipped twelve patrol cars and installed the main transmitter at Police Headquarters with a 60-foot mast on the roof.

One day, when all was ready, the operator said: "Headquarters calling Car Number 15; give your position and what is happening in the vicinity—Station W2XFA!" The answer came back slowly and distinctly, "Car Number 15, calling Headquarters."

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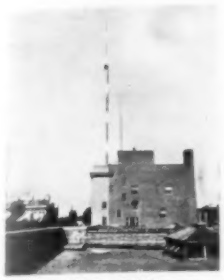

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dispatcher an interested and anxious listener. The cars, each aided by a knowledge of the location of the others, closed in on the desperadoes and forced their surrender.

Since the original twelve radio cars, many more have been added, until more than forty units are equipped with receivers and transmitters. These include a mobile emergency hospital and police booth which can be moved to any point in the city at short notice and used as a headquarters in the event of any great emergency or concentration of extraordinary crowds.

Fire Cars and Ambulances Equipped

Jersey City's police radio system has reached afield, and two cars used by deputy chiefs of the Jersey City Fire Department have been equipped with two-way radio. This enables them, when away from their home quarters on inspection tours, to keep in touch with Police Headquarters at all times.

The installation of transmitting and receiving sets in ambulances of the Medical Center is unique and efficient. This constant communication with Headquarters is useful because, in the event that an ambulance is dispatched to the scene of an accident or other emergency, and first-aid given on the spot, another ambulance call in the vicinity may be transmitted and the ambulance already in the section directed to answer the second call.

The present radio station consists of a reception room and the transmitting station. This station, in addition to being useful, is eye-filling and comfortable. The greenish walls and ceilings are of soundproof Celotex tile, which permits no reverberations to be transmitted through the microphone and thus impair reception. It also has the quality of making the sound of the human voice seem flat and toneless except to the policemen in the cruising cars—to whom it is clear and vibrant.

To insure complete harmony of decoration, the floors are covered with green battleship linoleum. The inscription RADIO-TELEPHONE DIVISION, J. C. P., with simulated lightning flashes, is inlaid in the floor covering.

The 100-watt main transmitter is crystal-controlled to insure against severe shifts in the frequency, which would cause interference with other stations as well as with intelligible reception by the cars. The former transmitter is now used for standby purposes.

The Control Desk

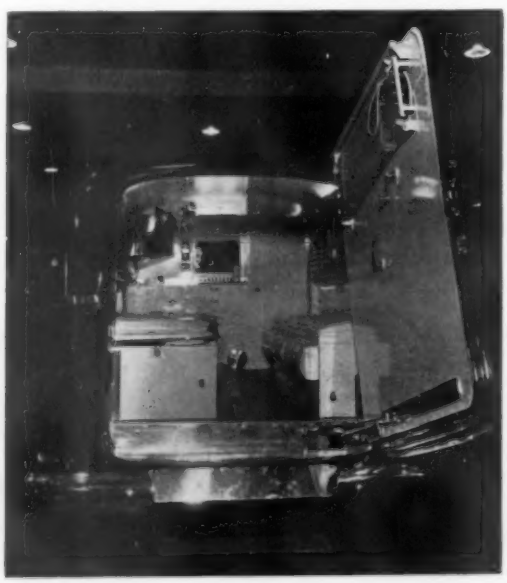
One of the most decorative as well as useful features of the transmission room is the radio control desk carrying the microphone. The desk is built entirely of steel and is semi-octagonal in shape. It is 9½ feet wide and 5 feet deep, and all fixtures are of chromium-plate and stainless steel.

All equipment is convenient to the dispatcher. At his left is the fire-alarm register, and at his right is the relay control unit which regulates the volume of the operator's voice when sending messages and also the volume of reception when calls are being made from patrol cars.

A 9½ x 4½-foot map of Jersey City enables the dispatcher to keep informed at all times of the whereabouts of the cars and what duty they are performing. Miniature cars, with numbers corresponding to those on patrol, are mounted on the map in their assigned districts, and small white, green and red lights controlled from the dispatcher's desk indicate the activity upon which each car is engaged.

Ambulance De Luxe for Firemen

ON THE night of the 1935 "Midnight Alarm" show in Madison Square Garden, Fire Chief and Commissioner John J. McElligott of New York City said of his men to the spectators: "By your presence you are enabling them to acquire a new ambulance for the service of firemen injured or ill in the performance of duty."



This ambulance went into service January 5, 1938. From the Mars light on the specially designed roof to the General traction tread tires, and from the rear-door-operated step to the new-type streamlined Sireno on the nose, the vehicle is a product of generous thinking, not only by the people of New York, but also by the officials of the Fire Department who planned each detail and by the Fred Roeder Mfg. Co., which put 3,000 hours of labor into the building of it onto a Cadillac 1937 chassis.

A crystal-operated General Electric radio receiver can tune to either the fire or the police frequencies. The heavy rear door is balanced by a spring stop. Indirect lighting is furnished by ten 8-volt, 18-cp lamps. On each side of the body, between the double floors and accessible from the outside, there is a compartment for blankets and splints.

The left-hand bench carries a bed stretcher with a removable guard-rail. Above it at the far end is the 5-gallon water tank with wash-basin underneath with running water and liquid soap. To the right of the tank is a paper-cup container, with a fan above it and an outlet for a portable lamp below it. The drawers are for instruments, including a sterilizer; door at right is to doctor's wardrobe; the heater inlet is shown near the floor; the windows, operated by handles, are fitted with Venetian blinds. The right-hand bench is upholstered in white washable leather, and has an extension flap to be supported by two legs that fit into the floor. This bench contains spare Carbogen cylinders for the H-H inhalators stored under the opposite bench, which also contains a first-aid case. The cabinet and interior lining are of aluminum to reduce weight (7,260 pounds for the vehicle).

Well Supply Aerated to Remove Iron, and Softened with Zeolite

Bicknell, Ind., Produces High-Grade Water for Domestic Supply

By THEODORE REED KENDALL
Engineering Editor, THE AMERICAN CITY

WITH its three wells furnishing a water of 30 grains per gallon hardness and with 6.0 ppm iron, Bicknell, Ind., faced the problem of delivering a really desirable water to its citizens. The problem was solved with a complete iron-removal and water-softening plant which was placed in operation early in June, 1937, and which furnishes a water of 4.0 grains per gallon hardness and 0.0 ppm iron to the consumers.

The Wells and Aeration

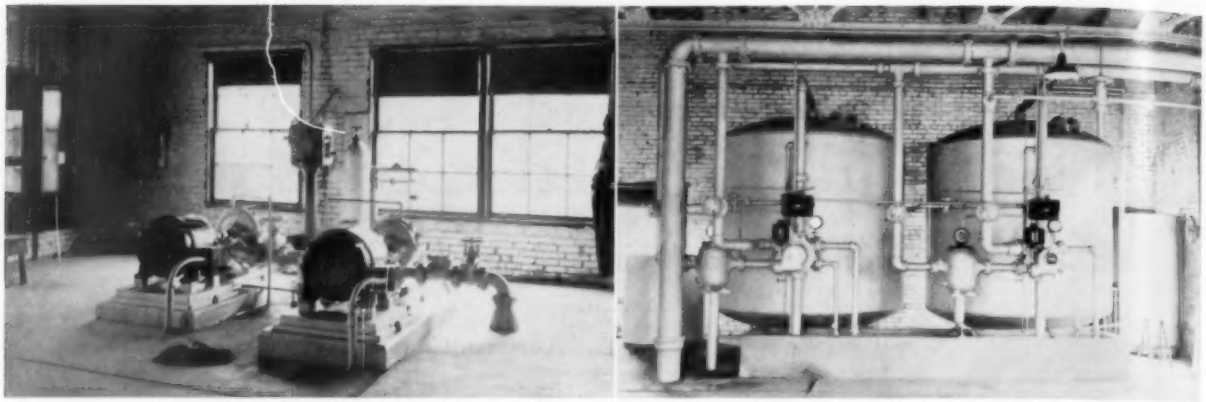
The city has three driven wells from 58 to 62 feet deep, all 10 inches in diameter and located within 300 feet of the filtration plant. Each of the wells is a gravel-packed unit and is separately pumped by an American 200-gpm deep-well pump powered by a 7.5-hp Howell electric motor. Each pump is housed in a concrete-block pump-house built over the unit.

The pumps discharge to a single aerator mounted on top of the concrete settling basin. The bell-mouth pipe discharges onto an 8-foot-diameter perforated plate through which the water trickles and drops one foot onto the first of three 9-foot-diameter by 1-foot-deep coke beds. This aerates the iron sufficiently to start its oxidation and precipitation. The water flows from the aerator through an opening in the top of the 18 x 35-foot settling basin leading to the trough for the flow through the basin, which is divided into two sections longitudinally so that one may be taken out of service for cleaning. At the effluent end the water rises and flows out over a weir. A float control in the settling basin starts one well pump when the level drops 6 inches from a predetermined level, starts the second when it falls a second 6 inches, and the third for another 6-inch drop. Similarly, the pumps are cut out as the level in the settling basin rises. The plant was actually started in May, 1937, before the formal opening, and the settling basin was cleaned for the first time on August 1, when a considerable load of precipitated iron was flushed out.

Filtration

The water from the settling basin is a deep iron-rust color as it flows to the filters. The filters, each of which is 10 x 10 feet in area, are controlled with Simplex rate-of-flow controllers and loss-of-head gages. The gravel and sand total 48 inches thick and comprise seven grades of gravel and filter sand. There are two wash-water troughs in each of the two filters, made of copper-bearing iron and

GENERAL VIEW OF THE BICKNELL, IND., PLANT, SHOWING THE WELL, THE AERATOR, THE SETTLING BASIN, AND THE BUILDING HOUSING THE PUMPS AND SOFTENERS



THE PUMPS AND PERMUTIT AUTOMATIC ZEOLITE WATER SOFTENER IN THE BICKNELL, IND., WATER WORKS

suspended from the building at the mid-point. All the cast iron specials in the plant were furnished by the American Cast Iron Pipe Co., and the valves by Chapman. The valves are all hydraulically operated for the control of the filters from the filter tables. Wash water for the filters is furnished from the clear well by a 1,650-gpm American centrifugal pump.

From the filters the crystal-clear water flows direct to the circular clear well located just outside the filtration plant and having a capacity of 50,000 gallons. A float control on the clear well shuts off the filters when the level of water reaches the top level, and a drop of 12 inches starts the filters again.

Softening

Water from the clear well is pumped through two Permutit automatic zeolite water softeners by one of two American 2-stage 300-gpm service pumps driven by Howell 30-hp electric motors. These deliver the water through the softeners and to the distribution system of the city. The zero-hardness water from the zeolite softeners is mixed with water direct from the clear well through a 2-inch pipe so as to furnish a water of 4 grains per gallon hardness for the consumer. The control is automatic through a proportional valve in the line.

A 3-inch Trident Crest meter on each Permutit softener furnishes the automatic control for the limit of water softened. When 69,000 gallons of water has been softened by the zeolite bed, the meter starts the automatic electrically controlled valve which attends to the process of regeneration. At the end of the softening period, the zeolite bed receives a 14-minute backwash at the rate of 300 gpm, with water furnished by the regular service pumps from the clear well. Then 230 gallons of a saturated solution of brine from the 300-gallon measuring tank is introduced into the softener by means of a hydraulic ejector. This requires about 8 minutes. As soon as brining is completed the softener is thoroughly rinsed with water from the line by the service pumps for 46 minutes at the rate of 72 gallons per minute. The softener immediately goes back into service.

The water is chlorinated by a hand-controlled Wallace & Tiernan chlorinator as it enters the service pumps from the clear well. The rate of chlorination is from 0.1 to 0.15-ppm. Caustic soda and silicate of soda are added to the combined softened and proportional hard water to regulate the pH to 7.5 in the main as the water leaves the plant.

A double concrete tank outside the filtration plant is used for the storage of the saturated brine solution. Each side of the tank holds a carload of salt, 40 tons, and the water is maintained at a definite elevation in the tank by a float valve. The brine is pumped to the inside measuring tank by a small automatically controlled brine pump which starts after a definite depth of brine has been drawn from the measuring tank for regenerating a softener.

A 125,000-gallon elevated storage tank in the center of the city maintains a pressure of 60 to 78 pounds on the distribution system. When the static pressure at the plant drops to the 60-pound point, the service pumps are started again. The daily consumption of the city is about 95,000 gallons, and the plant is operated from 8 to 10 hours daily with two 12-hour shifts in attendance, one man to a shift.

The plant is operated under the direction of Roy E. Strain, Superintendent of Water Works, and was designed by John W. Moore and John M. Moore, consulting engineers, Indianapolis, Ind. The plant was built as Indiana PWA Project 1166-D. Bicknell has a present population of 5,212 and is in the heart of the Indiana coal fields. At one time the city had several times its present population, but the difficulties that attended the operations in these fields caused many of the mines to shut down, and the population drifted away. It is hoped that with the new excellent water supply some industries will be attracted to the city which can use both the water and the unlimited supplies of cheap coal available in the immediate vicinity.

Four Civil Service Adoptions Raise Municipal Total to 677

ADOPTION of civil service by four cities during the past two months has raised the total number of merit systems at the municipal level to 677, the Civil Service Assembly of the United States and Canada said recently.

Three of the cities are the first in the Dakotas to come under civil service. They are Grand Forks and Minot, N. Dak., each over 16,000 in population, and Sioux Falls, S. Dak., population 33,362, which adopted merit systems by ordinance. By overwhelming majorities the voters of Miami Beach, Fla., population 6,494, approved a merit system and a pension plan for all city employees. The merit system becomes effective within three months.

Winter Ruts Are Banned from the Streets of St. Cloud

By NAT B. FISH
Commissioner of Streets and Public Improvements

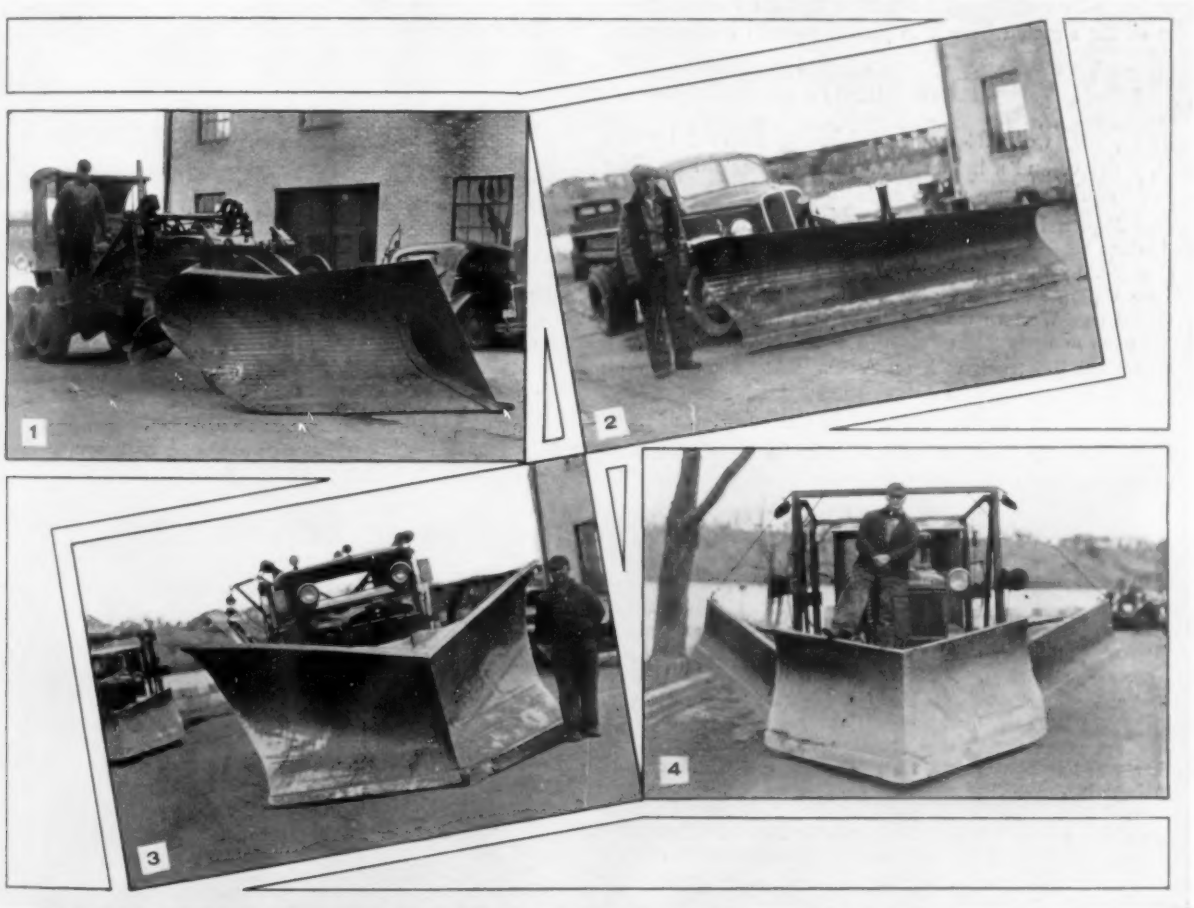
ST. CLOUD, a city of 25,000, is located in the central part of Minnesota where the snowfall is usually very heavy. Snow plowing and removal is therefore a major operation during the winter months, beginning often as early as October and continuing through April.

The Attack

There are 131 miles of streets in the city, of which 21 miles are paved and 48 miles are bituminous hard-surfaced. In the plowing and romoval of snow from the streets, we start two plows working on the main arteries while the storm is still in progress, after approximately four inches of snow has fallen. After the storm has abated somewhat, two more plows are started. The plows start from the central part of the city, opening all streets and avenues as they come to them, which is usually completed within 24 hours.

Following the initial plowing, the streets are gone over a second time in order to widen them to their full width. In the outlying districts the streets are protected from drifting snow by approximately seven miles of snow-fencing, which is erected every fall before the ground freezes. When the streets have all been plowed and widened, the alleys are also opened. There are approximately 107 miles of alleys.

The streets are scraped as closely as possible to their surface to avoid ruts. When ruts do occur, they are cut



SNOW-PLOWING EQUIPMENT USED IN ST. CLOUD, MINN.
(1) Austin-Western motor patrol with V-plow. (2) Ford V-8 with side plow. (3) International truck plow. (4) International TracTracTor with V-plow and wings

ONE OF ST. CLOUD'S TRUCK PLOWS OPENING A ROAD INTO THE CITY

down with the motor patrol, which has a blade and a scarifier attachment. This rolls the hard, icy snow to the side of the street, where it is picked up and hauled away.

Equipment

The plows work 24 hours a day, are manned by two men, a driver and a helper, who work 8-hour shifts. The type of equipment we use is as follows:

One 3½-ton International truck with a North Star V-plow and wings

One 40-hp, International TracTracTor with a La Plant-Choate V-plow and wings

One Austin-Western motor patrol with an A-W V-plow and blade extension

One Ford V-8 truck with an Austin-Western side-plow attachment

The two Internationals are used in the outlying districts where the snow drifts most heavily. The Austin-Western and the Ford V-8 operate in the business district and the more thickly populated residence district.

We have added to our equipment this year a 2-ton heavy-duty Studebaker cab-forward truck with special built dump-body built by the St. Paul Hydraulic Hoist Co. and equipped with an Austin-Western side plow, which we find ideal for snow-plowing. This truck will travel from 15 to 20 mph rolling the snow from the streets onto the boulevards.

Removal

At midnight following a snowfall, blades are put to work in the business district scraping the snow to the center of the street. It is then picked up by trucks and hauled away. This is the most expensive operation, for the snow is all loaded by hand labor to help out the unemployment situation which we have during the winter months. The lighter snow that is hauled is dumped into one of the large sewers, which has a steady flow of sewage into the Mississippi River. The hard-packed frozen snow is piled up on vacant property or dumped over the river bank.

Use of Sand and Cinders

On hills, or wherever "Stop" signs appear, the streets are cindered for a distance of 75 feet. These places become very slippery from cars stopping and starting. Cinders are used because they stay in place and grip much better than sand. The cinders are hauled by flat-bottomed trucks with two men spreading them.

Sand is used on crosswalks in the business section and on sidewalks wherever an icy condition exists. It is hauled by small pick-up trucks, the men filling pails with the sand and spreading it by hand.

Costs

The following is a record of the snowfall and the cost of removal for the past five winter seasons:

Year	Snowfall	Cost
1932-3	31.25 inches	$1,126.88
1933-4	34.10 "	1,463.00
1934-5	46.65 "	1,571.90
1935-6	63.50 "	3,638.46
1936-7	82.95 "	7,657.36

America's Elms Demand Public Interest

FLANKING avenues of cities throughout the United States, adorning their parkways and shading their home lawns, are 25,000,000 elm trees growing. But a dread malady, the Dutch Elm Disease, discovered in Holland in 1919, has already scourged to extinction the elms of Europe, spanned the Atlantic, and caused to be destroyed (since 1933) close to 4,000,000 of the elms in this country.

For the present, this virulent disease, caused by a fungus borne from tree to tree on and in the bodies of tiny European bark-boring beetles, is largely confined to an 8,200-square-mile area radiating from New York City, but there is no barrier beyond which it cannot pass. So far the Federal Government has spent $12,000,000 for eradication, but $15,000,000 more is needed. If each town would stop to think of the value of its own elms and realize that the existence of the disease anywhere in the United States is a direct threat to their lives, the justification of these expenditures would be forcefully apparent. Probably the greatest contributing factor in the spread of this blight is the public indifference to the Government program of education.

EUROPEAN ELM BARK BEETLE
Enlarged about 25 times

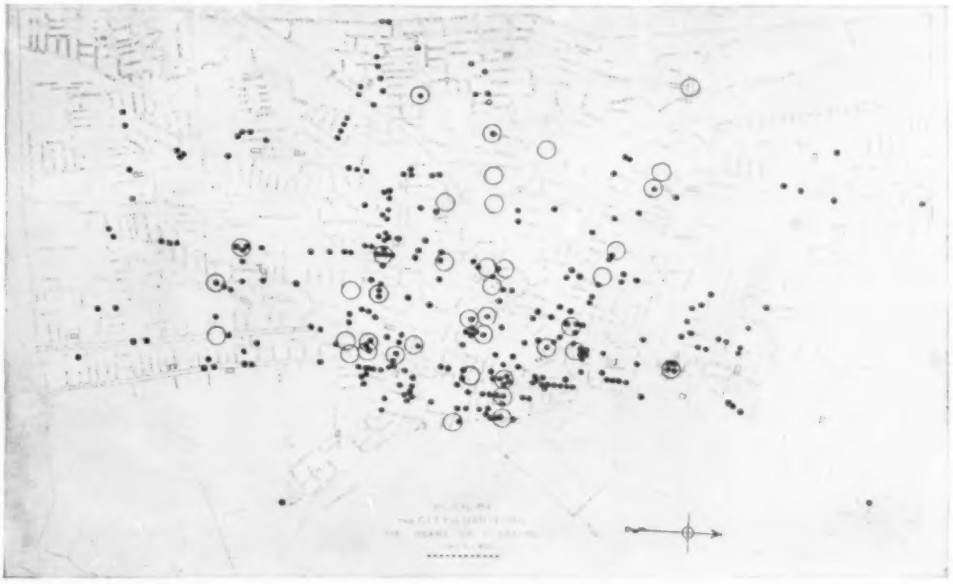
City Planning Should Include School-Plant Planning

By N. L. ENGELHARDT
Professor of Education, Teachers College, Columbia University

THE aims of the city planner and the school-plant planner are very similar. They both desire communities in which every advantage has been taken of natural contours and natural beauties to make the city attractive. They desire freedom from noise, traffic dangers, and other disagreeable features. They want to build a city in which individuals can live happy, constructive lives in a milieu which offers every advantage for social, economic, and intellectual growth. They seek the development of every worth-while agency,—the schools, the museums, the libraries, the parks, and the playgrounds,—to the end that they may serve the large majority of the citizens. They stress the interrelationship of industry and commerce with the social and intellectual growth of the citizenry. These workers hope to develop communities which have permanence, enduring attractiveness, and a high degree of serviceability to meet the wants of man. There must be more of understanding between city planners and the educational systems of our country. City planning commissions must learn to appreciate what the schools are doing and still hope to do. The school authorities must be able to conceive of their problems in relationship to all the constructive needs of the community.

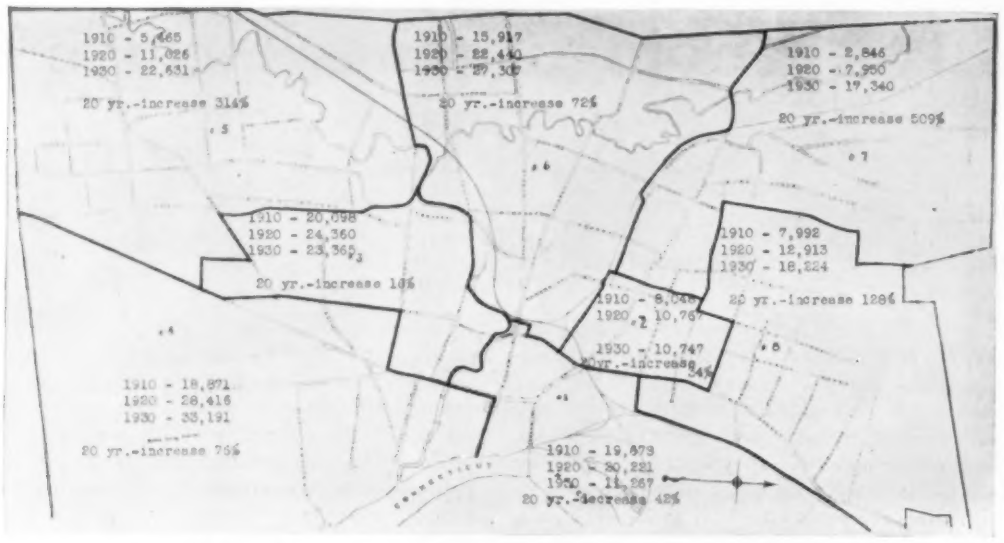
For the advancement of the school-building program, city planning commissions, or zoning groups, can provide much assistance. Maps on zoning, on proposed programs of street developments, on grade separations, bridge connections, and traffic detours, carry invaluable information for the school-plant program. In fact, it is difficult to conceive how many of these maps can be prepared without a full appreciation of what the present and future school-plant needs are, where sites should be located, and how these sites will be used for school as well as general community purposes.

A traffic hazard and accident map prepared by the Hartford school administration as part of its study of city problems is shown on this page. Land-use maps should be made periodically in every city, as well as other maps showing housing and changes in population. It is quite clear that such factual evidence as this will assist in forming the only constructive basis upon which to advance school-building needs.



The dots on this map indicate traffic accidents to children in Hartford, Conn. The circles represent intersections with major hazards. The school authorities have been utilizing facts like these to route the children back and forth to school. Continued studies of this kind should be used as the basis for assisting in the actual location of buildings and in the reduction of accidents. More adequate playground areas about each school, with a program of use after school hours as well as during the school day, should assist significantly in reducing the great number of school children involved in accidents

It is possible that much school-plant planning of the past has been basically faulty. The school buildings have been placed where the population exists. Frequently the housing for this population has not been planned, congestion has resulted, slums have appeared after the homes have become obsolescent, and a more or less permanent sore-spot has been created in the city. Both city and school planners should consider whether it is not more desirable to plan schools on the following principle: Select adequate sites and place buildings where the population ought to be, and have the residential growth come to the school area rather than have the school taken to a blighted residential area. The pursuance of this principle will certainly enhance community values. The placement of a school in a blighted area requires the demolition of antiquated and congested housing, and the rebuilding of both school and housing from the ground up. Such a process will of course be necessary in many sections of our



SURVEY DISTRICTS USED IN THE POPULATION STUDY OF HARTFORD, CONN.
These districts were formed from districts used in various previous population studies. The figures indicate the population changes which have taken place in these districts from 1910 to 1930

cities which have grown without planning and without primary consideration of human needs.

Estimating Population Trends

Estimating population growth presents many difficulties, but such estimates must be made if a future plan is to be projected. Engelhardt and Engelhardt in their book on "Planning School Building Programs" decry mere "booster" methods. They present the following as the preferred measures of economic change which reflect population change: assessed valuations, bank clearings, bank deposits, value of building permits, changes in railroad commuters, postal receipts, telephone service stations, gas meters, sewer extensions, water meters, electric meters, and building permits.* These factors cannot be taken separately but must be continually associated. The school-planning department of a board of education should have continuing records of changes involving these data.

The Basic Community Needs and Aspirations

School administrative authorities cannot develop a school plant without having adopted definite educational policies. These policies should grow out of a common philosophy of community life, of curriculum development and of community educational aspirations. The underlying philosophy will affect the size of site, the use to which it is put, the general character of the building, the nature of its contents, and the degree to which the facilities are utilized for the common good. Continuing studies of school population, enrolment and attendance by grades and geographic areas are recorded as a matter of course in a good school administrative office. There must be records of the appraisal of plant facilities. A policy with respect to size of building for each type of school should have been discussed and settled. The details of the financial program should be clearly at hand. Dot or spot maps of public and non-public school enrolment are made frequently, and the trends offer assistance in plant development. School census data, including pre-school as well as post-school groups up to the age of 21, are also recorded in such manner as to make possible pertinent regional interpretations. Many school systems today show a decline of elementary population, a rapid increase in high-school population, and an increase in the pre-school age group. The meaning of these trends must be determined as a school-plant program is being developed. The changes that take place in these trends must be known if school buildings are to be built to meet real rather than imaginary needs.

The School Building's Effect on Community and Individuals

The erection of a school building cannot be undertaken lightly. It represents a major investment of taxpayers' money. Its use will affect the lives of hundreds of individuals over decades. Its character will determine in part the very nature of the educational program. The building and the work that goes on therein will have untold effect upon community living and community growth. In many communities the school building and its associated program bring in new enthusiastic residents. In other communities, a school building and what goes on therein drive away the citizen and his family who had hoped for something better.

The underlying principle that should guide throughout the entire process is that mankind is entitled to conditions of living which will make his intellectual, social, and economic growth possible. Man's children must be started right. They must be given the opportunity for an all-round development. Children's lives, regardless of the families from which they come, must be satisfying in content, in aspiration, and in growth. The city environment, the school site, and the character of the school building can in large measure make or break a child's chances for happiness and achievement.

* Engelhardt, N. L., and Engelhardt, Fred: "Planning School Building Programs," p. 56. Bureau of Publications, Teachers College, Columbia University, 1930.

ACKNOWLEDGMENT.—This article comprises excerpts from a more comprehensive treatment of the subject by Dr. Engelhardt, appearing in the 1938 edition of "The American School and University" yearbook.

Improved Water Softening with Precipitators

New Method Used at Springfield, Ill., Simplifies and Effects Savings in Treatment

ONE of the features of the new water-treatment plant at Springfield, Ill., is the simplified lime-softening method, which has also produced economies in operation. The principal features which distinguish the plant from previous designs are the precipitators. A precipitator is a combination of mixing, coagulation, and settling tank, designed to bring the unstable lime-treated water into equilibrium quickly by retaining the previously precipitated carbonate and the hydroxide in contact with the water flowing through.

The precipitators are circular in form. The treated water enters the center of the apex of a conical compartment. It passes downward in this compartment, where it is agitated by a wheel 30 feet in diameter, rotating on a vertical axis at 1 rpm. At the base of the cone, the direction of flow is reversed and the water passes upward into an outer compartment, which has sloping sides, thus providing the quiescent stage for the solid precipitates to settle back into the more rapid stream of water at the base. The purpose of the design is to maintain the solids in suspension with as little agitation as possible, and to keep the conditions as nearly alike as possible at all points in any horizontal section throughout the settling compartment.

The situation is analogous to that which exists in a filter which is being backwashed. In this case, sludge is being floated instead of sand. Also, in this case it is necessary that the upper velocity be approximately the same at all points in the horizontal cone; otherwise, precipitate would be carried over and clarification would be prevented, just as in the filter the sand would be carried over if the wash water were unevenly applied. In the case of the precipitator, the material being handled is much lighter than sand, and the upward velocities are much lower than in the case of filter washing. Nevertheless, analogous results can be obtained, providing the agitation and design of the settling basin is carefully planned.

Example in Chemical Balance

Most water-works chemists are familiar with the so-called tests for chemical balance. In the test a few hundred milliliters of water on which the alkalinity has previously been determined are shaken with a teaspoonful of calcium carbonate powder. The alkalinity is then redetermined after filtering. If the water was unstable, owing to the presence of unprecipitated calcium carbonate, it will be stabilized by this procedure, with a resultant lowering of alkalinity. It should be evident that if the water which passes through a water-softening plant is treated by the same procedure as the water which was shaken in the flash, a stabilized plant effluent will result. That is just what is now being done on a large scale in the precipitators at the Springfield, Ill., plant. The mixing stage of the process takes place within and beneath the settling stage. The precipitated solids, instead of settling to the floor of the basins to be removed by some sort of scraper mechanism, or flushed out, fall into the agitating zone and accumulate until they are removed by draining into a separate small sludge concentration tank.

THE BATTERY OF THREE PRECIPITATORS AND THE RE-COMBINATION BASIN AT THE SPRINGFIELD, ILL., WATER WORKS

THE SPAULDING PRECIPITATORS UNWATERED, SHOWING THEIR CONSTRUCTION

The Springfield Precipitators

Each of the three precipitators at Springfield has a rated capacity of 6 mgd based on an arbitrary limitation of 2 inches vertical rise per minute at the top of the tank. The total detention period for mixing and settling at this rate happens to be about 90 minutes, though this is not important. As in the case of filter washing, the temperature of the water has an important bearing on the rate at which the precipitators can be operated, owing to the change in the viscosity of the water. Thus, a unit which is capable of handling 6 mg at temperatures near freezing, will handle double this amount when a summer temperature prevails. In other words, cold water lifts the precipitate lower than warm water. This is rather fortunate, because peak loads in water works almost invariably occur during the summer. Operation at Springfield has been at the 6 mg rate during warm weather, leaving the second unit out of service.

There are three precipitators at Springfield, all of which may be operated in parallel, or the third precipitator may be placed in series with either or both of the first two. A re-combination basin was provided so that it could be used either before or after the water passed through the third precipitator. However, re-combination has not been used since February, 1937, because it was found that the temporary hardness, alkalinity, could be reduced to the lowest desirable figure, namely from 30 to 35 ppm, without the use of excess lime treatment and therefore without re-combination. The alkalinity of the final effluent at the filter plant during the past eight months has averaged 32 ppm. The water has been maintained with a normal carbonate without either bicarbonate or caustic alkalinity. In this condition it enters the mains with a slight tendency to provide a protective coating for the pipes, and with sufficient excess carbonate to withstand the acidifying effect of chance corrosion.

Disposal of Precipitate

The precipitates, which accumulate in the softening process through the use of the precipitator, are disposed of by allowing the precipitator to bleed more or less continuously into a sludge concentrator from which the clear supernatant water is returned to the dosing well, while the concentrated sludge is removed from time to time by a sludge pump discharging upon a sludge drying bed. This operation is not at all complicated. The rate at which the thin sludge is being drawn from the precipitator, depends upon the rate at which the clear water is pumped out of the concentrator. This is accomplished with a small pump delivering 100 gpm. This pump ordinarily operates eight to sixteen hours per day, during which period the thin sludge is being removed from the precipitator. A small pump removes the concentrated sludge during a period of four to eight hours per day. The concentration of the sludge in the precipitators varies from time to time through a range, roughly, of 1 to 3 per cent. The concentrated sludge ordinarily contains about 10 per cent solids.

The sludge drying beds consist of two rectangular fields about 250 feet square, surrounded by a low earth dyke. Sludge was pumped into one of these fields for some eight months of the year and then diverted into the second field. Meanwhile, the first sludge has dried and will doubtless be hauled away by farmers.

Saving in Filter Area

The thoroughness of the lime treatment in the precipitators has been capitalized by reducing the area of the sand beds of the filters. Instead of two gpm per square foot of surface, the filters are rated at 4 gallons per square foot, and they have handled 25 per cent overload without undue loss of head or sacrifice of quality. This high rate is possible because of the coarseness of sand grains, which are all practically in excess of 1 millimeter diameter.

The sand may be said to have been "raised" at the city's first softening plant, where it grew during a ten-year period from an original effective size of 0.4-mm to its present dimension. At the former plant this increase in size did not apparently impair the quality of the filter effluent, but it made a higher rate of operation practical. The ultimate limitation at the old plant would have been inability to wash the filters with the 30-inch rise per minute available. At the new plant a 45-inch rise of wash water is available, and the sand will be usable for some years.

An advantage of scaled sand is that it more effectively brings the applied water to final chemical balance as it passes through, just as the marble test does in the laboratory. Another advantage is the protection against silica which may be dissolved by water of high pH as it passes through siliceous sand. The usual sand specifications requiring insolubility in strong acids are really illogical when applied to a lime-softening plant. Alkaline insolubility would be more to the point.

—From a paper presented by CHARLES H. SPAULDING, Superintendent of Water Purification, Department of Water, Light and Power, Springfield, Ill., at the Thirteenth Annual Missouri Water and Sewerage Conference.

American Water Works Association
58th Annual Convention
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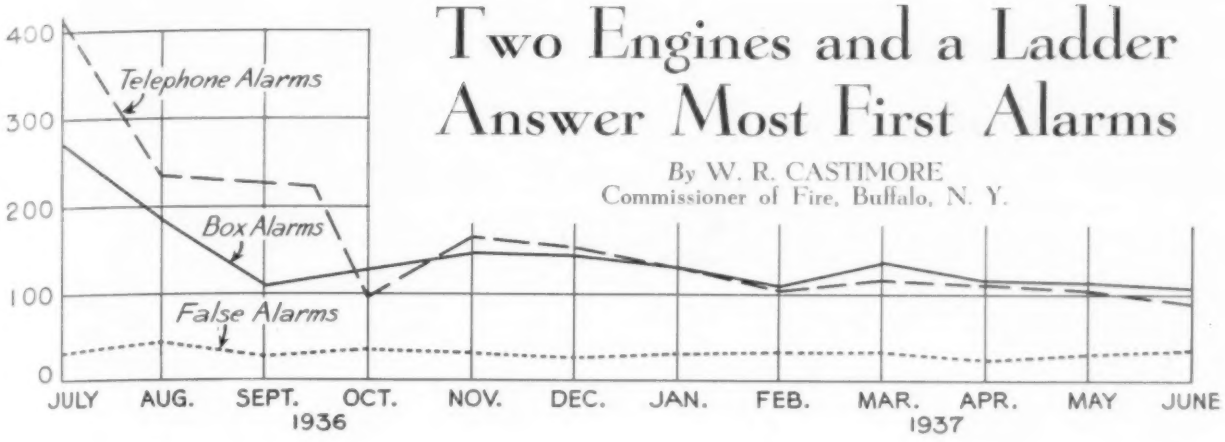


Two Engines and a Ladder Answer Most First Alarms

By W. R. CASTIMORE
Commissioner of Fire, Buffalo, N. Y.

THE frequency of demand on our fire services at Buffalo is indicated by the accompanying chart showing the numbers of box, telephone and false alarms for the 12 months July, 1936, through June, 1937. The totals are 1,694 box, 1,829 telephone, and 380 false alarms. The grand total of alarms during that period was 4,064, with the months of heaviest demand January and February in 1936, and March and July in the first half of 1937.

The fire-alarm-telegraph system and the commercial telephone are used about 50-50 for the transmission of alarms. The 1,282 boxes are checked and supervised by one man who does nothing else, covering all each 30 days. A feature of our system is an all-relay transmitter which permits us to transmit accurately all alarms from any one of six keyboxes placed along the fire-alarm boxboard, each keybox taking in 40 box circuits. There are keys for Start, Correction, Preliminary Signal, and 2nd, 3rd and 4th Alarms.

A first alarm in daylight and good weather is responded to by two pumping engines and one ladder and a battalion chief. As 99 per cent of the calls are first alarms, and this response has been found to be ample in most cases, it constitutes one of the economical practices made necessary by depression rations. In bad weather and to fires in hazardous locations, we dispatch full assignment.

A second alarm calls four engines, two ladders and two battalion chiefs.

Our 57 pieces of apparatus include:

35 pumpers and combinations (21 over 15 years old, 5 on reserve)
14 aerial ladders (2 on reserve over 15 years old)
2 water towers
2 squad wagons
3 high-pressure trucks
1 fireboat

In addition, there are 14 maintenance trucks and 22 passenger cars.

First-class and unremitting repair work has maintained the efficiency of the Buffalo Fire Department these last eight years, and until last year we bought no new apparatus. In 1937 we added two 1,500-gallon Buffalo pumpers, two high-pressure rigs, and two squad wagons. Our previous purchases were in 1930 for two 1,000-gallon American LaFrance pumpers.

High-Pressure System

The high-pressure system has been improved and extended until it now comprises 213 Wood and Smith hydrants and 14.2 miles of mains. This system was started in 1898, with a 1½-mile 12-inch line up Washington Street, equipped with 12 to 15 hydrants and supplied by fireboat. The system was extended, the lines being placed below frost level, and pumpage furnished by three 3,000-gallon 4-stage steam-turbine-driven pumps. Recently three 3,000-gallon Worthington pumps driven by Westinghouse motors have been added to the system. Feeder lines are 20-inch, the branches 12- and 16-inch, and a connection for a fireboat is still maintained at Columbia Dock.

The system has a bypass from the city water supply which furnishes 60 to 80 pounds at all times. On receipt of an alarm from a box located in the high-pressure district, one high-pressure pump is operated and 100 pounds pressure maintained. If no further call is received, the pump is shut down after 15 minutes. Should the pumping station go out of service, the fireboat known as Engine 20, built in 1902 and equipped with three 3,000-gallon pumps, connects to the system.

Memphis Restudies Its City Plan

A TWO-YEAR program for revision of the city plan is under way in Memphis, Tenn., to meet modern problems occasioned by the growth of the city and changing trends.

Mayor Watkins Overton has engaged Harland Bartholomew, planning engineer, to make studies supplementary to the present city plan, which Mr. Bartholomew designed 17 years ago.

A staff of engineers and draftsmen is already at work on preliminary population and land-use surveys. Traffic, transit, transportation, housing, zoning, street lighting, parks, recreation, and other phases of city life are to be covered.

Neighborhood improvement and development to prevent blighted areas are to be stressed. Memphis wishes to find and apply solutions for the problem of urban land waste caused by flight of population to suburbs and the consequent decay of large sections of the older city.

Working with the experts under Mr. Bartholomew's supervision are the Memphis City Planning Commission, its planning engineer, the Department of Public Service, Department of Public Works, Park Commission, and various city bureaus.

New Life in Public Works

Benefits of Retiring Obsolete Personnel and Equipment and Publicizing Department Work

By J. L. PARSONS
City Engineer and Street Superintendent, Fort Dodge, Iowa

IN April, 1937, when a new street commissioner took office in Fort Dodge, an experiment was inaugurated in the administration of the street, bridge, grading and street-cleaning revenues of the city. Previously these funds had been expended under the general supervision of an elective street commissioner assisted by an appointed street superintendent. Inevitably this system resulted in a changing program depending upon the training, experience and judgment of these officials. Often a two-year elective term expired before even the fundamentals necessary to efficiency were learned by those in charge. Under the new plan the city engineer is appointed street superintendent, and considerable authority is delegated to him. While the millennium has not been even approached, a program has been developed gradually and executed so as to increase materially the results obtained from the available revenues.

Personnel

The first serious problem was the personnel of about fifteen regular street employees. Five of these were incapacitated for effective service by old age and physical infirmities and had been retained only for charitable or other reasons. In the interest of efficiency and in spite of the absence of a pension system and the resulting injustice, these men have been replaced gradually by younger, intelligent, capable men. This was done at considerable intervals to mitigate any public antagonism that might result.

In all contacts with employees special effort has been made to encourage them to cooperate in making suggestions regarding the execution of projects and the use and care of equipment. To encourage a feeling of pride and dignity in their work, considerable publicity has been given to the work of employees by the use of photographs and newspaper items. At one time the entire force were entertained at a service club luncheon by the street superintendent, and their duties and service to the community were explained in detail to the business men present. The beneficial effect of these efforts upon the force and the public has been very marked.

The general supervision of all work under this department has been done by an assistant street superintendent, an employee of long experience in practical work, who is willing to work along with the men under his charge and who does not over-emphasize his authority. The shop repair work, time-keeping and equipment records are under the charge of a shop foreman who is willing and able to devote any spare time to any project under way. The men in the force best fitted have been chosen for special project supervision. The general duties of the Street Department have been routine matters of repairing defective pavement, cleaning streets, maintaining earth and gravel streets and alleys, grading earth roads, and maintaining all bridges. All time not devoted to these routine matters is devoted to special projects, which are mentioned later.

Street Cleaning

For street cleaning, it has been customary to operate an old Elgin sweeper in the business and residence districts, followed by a pick-up truck, with occasional flushing with an old machine. The flushing equipment was mounted on a heavy chassis with hard-rubber tires and without headlights. This work was supplemented by two of the older men operating rubbish pick-up cans in the business districts. After a few months' experience with this method and incurring a prohibitive bill for the repair of the old sweeper, the entire set-up was changed. As funds were not available for the purchase of a new efficient sweeper, the use of the old ones was discontinued entirely except for picking up leaves in the fall clean-up.

The flusher was operated daily in the business district, from 4:00 to 8:00 A.M., and on alternate days in the residential districts from 8:00 until noon. One truck and three men were assigned to the business district, starting at 6:00 in the morning to pile and pick up rubbish in the gutters, and then completing their eight-hour day in the residence districts. The use of pick-up carts was discontinued. Although this work has been so experimental and changeable during the past season that exact comparative costs are not available, it has been demonstrated conclusively that the system now in use is more effective and economical with the equipment available. The results have been especially pleasing in the cleanliness of the streets resulting from flushing the débris to the gutters. This coming season, it is planned to increase the rate of cleaning gutters and to mount the flushing equipment on a chassis with pneumatic tires and headlights.

Pavement Repairs

The major problem of the street department has been the repair of 40 miles of paved streets consisting largely of asphalt, asphaltic concrete and concrete surfacing, with a small proportion of wood block, bithulithic, vibrolithic and brick paving. Unfortunately, about 60 per cent of the paving is of inferior quality and requires excessive expenditures for repairs. In recent years it has been customary to purchase an asphaltic mixture consisting of cold mix asphalt and gravel from a firm located 100 miles from Fort Dodge, at a delivered price of $7.50 per ton. After experimenting with home production of this material, using a small city-owned mixer and local sand and gravel, the entire amount of 500 tons necessary per year is now being

produced by street employees in the city yard at an annual saving of $1,800.

Resurfacing

Because of the excessive annual cost of patching defective surfaces, plans were made early in 1937 to inaugurate a program of resurfacing that would gradually reduce this recurring excessive demand on funds. After some experimental work and investigation of the experience of other cities, a plan of resurfacing was adopted requiring a minimum of expenditure, because of the large mileage involved and a desire to cover the greatest possible number of blocks in the minimum period of time. It was felt that the plan adopted would eliminate the cost of patching in approximately three years with the funds available, and would accumulate a reserve for a more effective resurfacing program at a later time. Every dollar saved in the cost of patching results in a proportionate increase of funds available for more permanent construction.

During 1937 a total of 22 blocks of asphalt pavement and wood block was resurfaced by the regular street force, by the application of a prime coat of surface-treatment cold asphalt after thoroughly sweeping the surface. Then, by the application of a second coat of hot No. 6 asphalt 24 hours or more later, and a final immediate application of a coat of heavy sand, the work was completed. As each block was finished, the resulting mat coat was rolled with a 10-ton roller and the street thrown open to traffic.

After several days the excess sand is removed economically by flushing to the gutters and picking up by hand shovel. Any bleeding of the asphalt on hot days is cured by the application of a light sprinkling of sand. The cost of this treatment averages 10 to 12 cents per square yard. The experience of Fort Dodge and other cities indicates that this mat coat effectively seals the surface for a period of five to fifteen years, depending upon the amount of traffic. The cost of this work was paid from city revenues, and no assessments were levied upon the abutting property.

PROPERTY OWNERS CAN OBTAIN WEATHER-PROOF ALLEYS AT SLIGHT COST

City To Cut Cost Of Street Care By Asphalt Surfacing

Last Winter Hard On City Paving

SATURDAY, JULY 31, 1937.

SATURDAY, DECEMBER 11, 1937.

Devoted Principally to Fort Dodge and Vicinity

Street Marking Project More Than Half Finished

TYPICAL PUBLICITY FOR THE PUBLIC WORKS DEPARTMENT OF FORT DODGE, IOWA, WHICH APPEARED IN THE *MESSENGER AND CHRONICLE* OF THAT CITY

Street Name Signs

In the normal work of the Street Department it is found that at times the pressure of necessary work is greatly reduced so that some program is required to provide special work for the regular employees at these times, or else they would tend to be idle or employed in inconsequential work. Since the entire city was marked by only about thirty legible street signs, which resulted in confusion and inconvenience to the public, the idle time of the Street De-

partment employees has been utilized in the manufacture and installation of 300 new street name signs. These consist of 4 x 4-inch wood posts painted white and with 1 x 4-inch cross boards with the street name stencilled on the boards in black on a white painted background. In the business districts the cross boards are attached to electrolier posts with locally-manufactured iron brackets. This cheaper type of sign was adopted because of a lack of funds for the better and more expensive type on the market. The total cost of all materials for each sign was approximately $1. During the winter and during 1938 an additional quota of 200 complete signs will be made and installed, which will provide a marker for every intersection in the city. These signs have proved to be very legible and have resulted in a greater public reaction than any of the other special work done thus far.

New Grading

For some time there has been a demand for the grading of the streets in a new development. This work has been delayed owing to the fact that the only equipment owned by the city for this purpose was a medium-sized power grader. It had been assumed that work of this type would require more expensive equipment. Experimentally, some new grading was started by the opening of the side ditches with a plow and team and the shaping of the roadway by the power grader. End haul, where necessary, was done by team with a wheeled scraper. By the use of these rather primitive methods very satisfactory results were accomplished at a reasonable cost.

Removal of Street-Car Rails

During wet and icy weather the presence of abandoned street-car tracks in the main street of the city has proved a serious traffic hazard for a number of years. In the late fall of 1937 six blocks of these rails were removed by the street force by the simple process of lifting the rails with track jacks, cutting them into lengths easily handled by use of a torch, and hauling them to a local junkyard, where they were sold for $10 per ton. The space between the wood blocks on each side and the serviceable brick between the rails was filled with coarse limestone saturated with cold asphalt and then surfaced with hot asphalt and limestone screenings. The oldest ties were left in place, since it is reasonably certain that the street will be re-paved at some later date, at which time these ties can be removed more economically. The result has proved very satisfactory, and the income from the sale of the old rails has more than paid for all costs incurred.

Miscellaneous Projects

During the construction season of 1937 the regular street employees hauled and placed 3,000 cubic yards of gravel on the city streets and alleys from a city-owned pit. Instead of loading trucks in the deep pit by hand, as in the past, a drag line was hired as required to excavate the gravel from the pit and place it in stock piles for daily use. While this drag line was in operation, every available department truck was assigned to hauling and placing the gravel to save the cost of hand loading as much as possible.

The city yards and buildings were overhauled and painted, all useless accumulations were sold or hauled away, all city equipment was thoroughly repaired by the city mechanics and all trucks painted a uniform orange. It was felt that order, system and neatness would add greatly to the pride and efficiency of the workmen, as well as attract public notice and appreciation.

New Equipment

During 1937 the only new equipment purchased was one new truck to supplement the four trucks already in use, and one new snow-plow to add to the two already owned. Thorough investigations were made before purchasing the new truck to secure the one best suited for street purposes. The one finally chosen was a 1½-ton truck with an unusually low frame and a hydraulic dump attachment. From observations in other cities as well as our own, it is believed that trucks generally used for street work are too high and require too much useless labor in hand loading. Truck manufacturers should develop trucks as low as possible for street work, particularly when so much hand work is unavoidable.

Conclusion

The policy of the Street Department during the short time it has been under the new management has been to encourage the loyalty and cooperation of the men in the organization and to accomplish as much useful work as possible with the funds available, in the hope that in case public approval is earned, more funds will be made available. Also, special effort has been made not to exceed the appropriations in any of the four budgeted funds.

Many from Training Courses Enter Public Service

THE Civil Service Assembly of the United States and Canada reports that of public administration graduates of five institutions specializing in such training courses, 83 per cent now occupy governmental or quasi-governmental positions or are teaching in related fields.

Of 375 graduates of Syracuse and Stanford Universities, the University of Cincinnati, the University of Michigan, and the former National Institute of Public Administration, 54 now hold positions in the Federal Government; 43 in state governments; 35 in city, 29 in county, and 1 in an unclassified governmental agency. Ninety-six graduates are working for quasi-governmental organizations, while 53 are teaching at various educational institutions.

Training opportunities in public administration are offered in nearly 150 colleges and universities, compared with 37 courses offered ten years ago. A number of these offer fellowships and scholarships for graduate students and others already experienced in government employment, among which are: The new Graduate School of Public Administration established by Lucius N. Littauer at Harvard University, which will finance fifteen students next year; the National Institute of Public Affairs in Washington, D. C., which has a 1938-39 interneship training program for fifty appointed students in departments of the Federal Government; and the University of Minnesota, which lists in-service fellowships in public administration for college graduates who have had three years in the public service.

Unique in the scheme of public service recruitment and training is the plan recently devised in Wisconsin. By a law enacted in 1937, loans may be granted selected students at Wisconsin educational institutions in return for a two-year apprenticeship served when their college work is finished, in administrative offices of state or local governments.

Relief Project Provides Work and Saves City's Shores

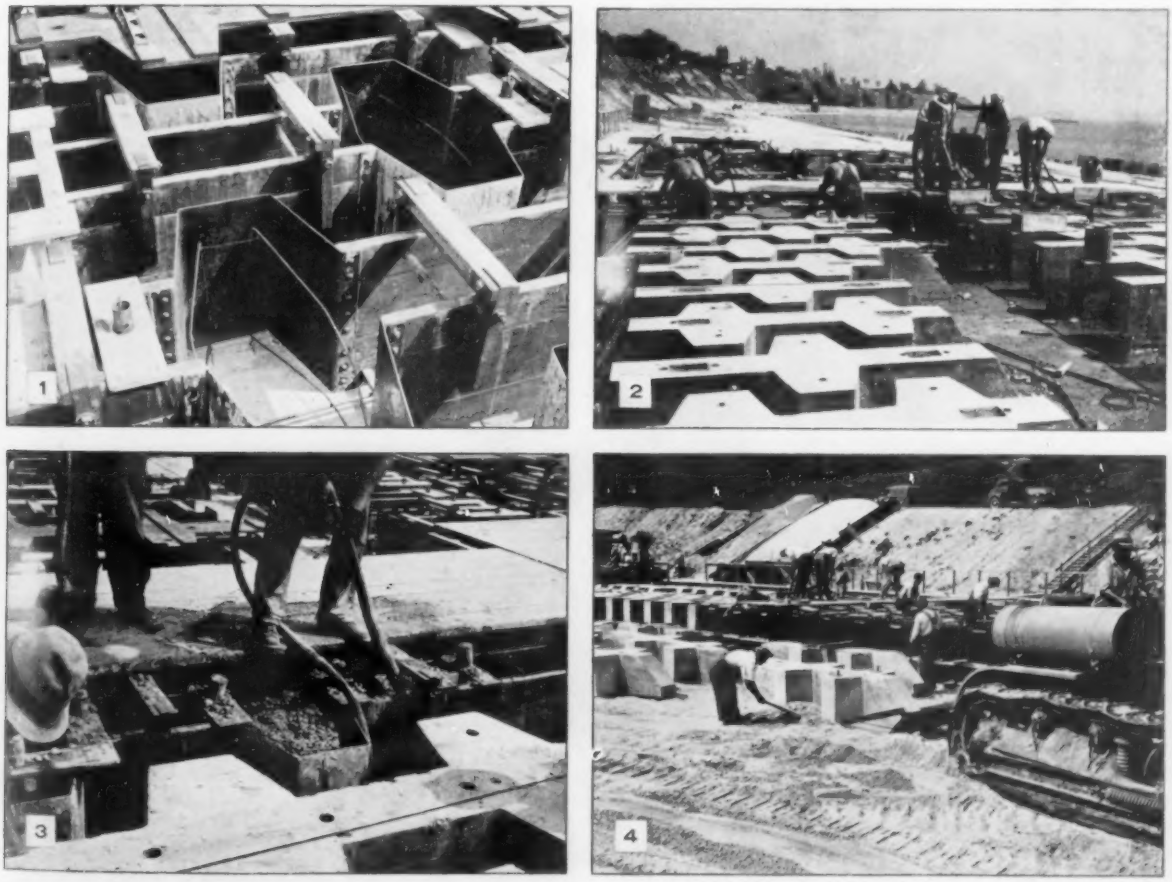
Permeable Jetties Check Lake Michigan 20-Foot Waves

By A. L. BOLEY
City Engineer, Sheboygan, Wis.

A CONSTANT southerly shore current characteristic of the west shore of Lake Michigan, and scouring inshore currents formed by the 20-foot waves of the violent and frequent storms that sweep down the Lake Michigan shore at Sheboygan, Wis., are now being bridled by a series of concrete jetties and forced to replace some of the sandy beaches stolen during the past years. Permeable groins of concrete similar to those already in use in Shorewood, Cudahy and Kenosha extend into the lake across the eroding currents and change their devastating sweep into a series of eddies that leave a layer of lake-bottom sand in their wake. In a few years the space between the groins will be filled with sand, adding several acres of bathing beaches to the city's front yard and protecting the lake-shore property from further erosion.

Jetty Construction

The groins, four in number, were constructed at North Point where the littoral current swinging inshore behind the rock point had scoured out a shallow bay. The groin on the point extends 56 feet into the lake, while the others, spaced about 400 feet apart in the bay, are 228, 186 and 143 feet long, respectively. All are connected to a sea-wall by solid concrete walls varying from 60 to 300 feet in length, depending on the width of the beach.



CASTING AND HAULING CONCRETE BLOCKS FOR THE POROUS WALL JETTY AT SHEBOYGAN, WIS.
(1) Forms at the block plant. (2) Pouring concrete into the forms. (3) Vibrating the concrete for the precast jetty blocks. (4) Tractor hauling blocks on a skid along the lake shore

GENERAL VIEW OF THE PLANT WHERE THE BLOCKS WERE MADE FOR THE POROUS WALL JETTY AT SHEBOYGAN

The jetties, designed by Sydney M. Wood of Lake Bluff, Ill., are constructed of 3-ton precast concrete units laid in tiers forming a permeable checkerwork capable of withstanding the severe coastal storms of the region. The units in the lower tiers are 13 feet 10 inches long, 2 feet high and 1 foot thick. Eccentrically spaced tapered lugs, 1 foot 3 inches long, 1 foot wide at the outer end and extending the full depth of the units, support the upper courses and form baffles in the open slots. From two to four courses of these units were used, depending on the depth of the water. Those in the upper tiers, placed above the surface of the lake, are tapered to 9 feet 10 inches and 7 feet 4 inches, respectively. A deck of precast slabs 9 inches thick reinforced with two layers of ¼-inch rods on 2-foot centers completes the groins. The completed structures are held together by ¾-inch rods passing vertically through the members.

The concrete walls, 12 inches thick with 6 x 12-inch pilasters on 10-foot centers, were reinforced with ½-inch rods on 2-foot centers both ways. The height of the wall varies from 4 to 8 feet depending on the subsoil conditions.

Making the Blocks

A plant for the manufacture of the concrete groin units was established on the lake shore. Materials were delivered by truck, chuted to the plant from an upper road, proportioned by weight, and mixed in a one-bag mixer. The concrete was transported in wheelbarrows over movable platforms to the forms, where it was compacted with a motor-driven spud vibrator. Forms consisting of well-oiled wooden sides with 10-gage steel sheets forming the lugs and the ends were built in groups for mutual support. Clamps over the side wales and rods at the ends of the forms, both fitted with tail nuts, facilitated the removal of the finished blocks. After the units had received their initial curing by spraying with a hose, a tractor pulling a flat-bottomed stone boat slid them over the beach to the water's edge, where they received their final curing. A crew of 22 men furnished by WPA maintained an average production of 20 units per day during the 40 working days that the plant was in operation. By October the 837 jetty blocks had been completed, the plant closed, and the equipment moved to the beach, where the shore-section walls were erected by the same crews.

Erection of Jetty

The permeable portion of the jetties was erected with a crane, which was also used with a clamshell bucket to remove the sand overburden. The first of the blocks were placed in July, and an average of sixteen per day were laid in the days that the jetties were actually under construction.

The project was financed jointly by the city and the Federal Government. The WPA furnished the labor, while the materials, equipment and technical supervision were provided by the city. The writer planned the improvement and supervised the construction.

GENERAL VIEW OF THE JETTY OF PRECAST CONCRETE BLOCKS ON THE LAKE SHORE AT SHEBOYGAN

Citizens' Public Celebrations Association of Boston

THIS unique organization had its 25th anniversary on January 27, 1938. As one portion of a combined public-official and private-citizen method of observing holidays and public events, this permanent body cooperates with a Director of Public Celebrations named by the Mayor in planning and conducting such affairs. Its stated purposes are: "To encourage constructive, interesting and enjoyable observances of public holidays and commemorative occasions; to strengthen community pride, public spirit and civic welfare; to perpetuate knowledge of significant historic events; and to cooperate with municipal agencies and citizen groups to the same purpose."

The accomplishments of the Association include the production of a City Flag and City Colors through public competition, which were made official by action of the City Council and the Mayor, the gradual acquisition of permanent equipment and decorations designed for regular use, the installation of an amplifying system on the Common by the city through the Association's efforts, and the origination and development of municipal celebrations for six annual holidays.

While the pioneering has rested mainly with the Association, the plans agreed upon have been carried out by city officials and citizens' organizations working together. Most, but not all, of the financing has come from the city, although the Association has no control over expenditures from public funds.

WIDENING STRIPS BEING LAID AND FINISHED ON STREET RUNNING SOUTH FROM THE MAIN BUSINESS DISTRICT OF LAWRENCEVILLE, ILL.

Streets Widened to Permit Diagonal Parking

Area Adjacent to County Courthouse Improved by Reducing the Sidewalk Widths

THE question of diagonal parking has been thrashed out in Lawrenceville, Ill., much as it has in many other cities, the conclusion being that since it permits a greater number of cars to be parked along a given curb line, it is best, provided that the cars do not encroach on the street area required for safe passage of traffic. Lawrenceville, like many other county-seats, has practically all its retail business centered around the courthouse square. Wide sidewalks and wide grass plots between the sidewalks and curbs have made possible the widening of several blocks from 10½ to 14½ feet on each side of the street.

The earlier projects included widening around the courthouse and also for guest parking at the hotel, while the most recent work, running for three blocks south on 12th Street from the courthouse square, will provide total street widths of 50 and 56 feet. Since the street widths of the original brick pavement are variable, the resulting street widening is being varied to give a uniform-appearing street when the work is completed. This means a widening in the first block of 14½ feet on each side, in the second block a widening of 10½ feet on each side, and in the third block a widening of 13½ feet on each side.

The brick pavement is laid on a concrete base with a sand cushion. The widening strips are of 9-6½-9-inch section with a separate concrete curb 15 inches high, giving a 6-inch curb above the roadway and 7 inches thick with a vertical face and curved top. The work is being financed with the city's share of the state motor-fuel tax, 1 cent of which is allotted to cities, and the work is being done by force account, using needy and willing laborers as far as possible.

Well-Organized Concrete Crew

The sand and gravel for the concrete was stockpiled on the brick street ready for the work, and was shoveled into wheelbarrows and weighed for each individual batch on Winslow wheelbarrow scales. Two men wheeled the gravel, and one wheeled sand to the skip of the 7S Knickerbocker two-bag mixer. Three concrete buggies were used to wheel the mixed concrete to the section being poured, where three men spread the concrete and started screeding it with a suitable length of heavy timber with handles. This was immediately followed by the use of a longitudinal float to give a smooth finish.

Concrete joints of the metal air joint type furnished by the Universal Highway Products Co., of Chicago, Ill., were installed at either end of the block and at intervals of not over 90 feet throughout the block, and contraction joints were placed between at intervals of not more than 30 feet. The concrete was finished by one hand finisher and a helper, followed by two men placing the burlap, which was kept on the surface and wet for 24 hours. Then upon the removal of the burlap the surface was covered with sand to a depth of 2 to 3 inches and kept wet for 14 days.

The work on these three blocks cost $8,000 and was done under the direction of R. J. Benefiel, Acting City Engineer, of Lawrenceville.

Property Owners Request Special Assessment for Park

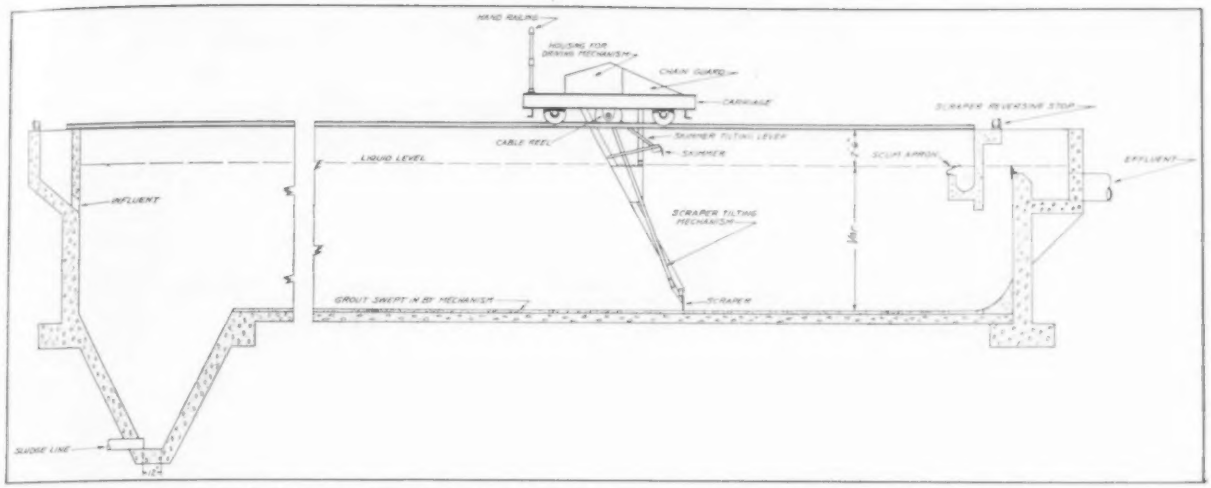
WHEN property owners request a city to levy a special assessment against them it must be news.

Such a request made by property owners of Portland, Ore., was reported recently by the American Society of Planning Officials. Portland's Planning Commission suggested that the city purchase a 15-acre tract of land for use as a local park several years ago, but the financial condition of the city did not permit the purchase.

When property owners near the proposed park site learned recently that the land was to be subdivided, they petitioned the City Council to acquire the land and assess the cost to them at the rate of $8.60 per 5,000 square feet, the average city lot.

They got their park.

NOTHING TAKES THE PLACE OF
THE WHEEL
NOTHING TAKES THE PLACE OF
CAST



CROSS-SECTION OF A SETTLING TANK EQUIPPED WITH A HARDINGE RECTANGULAR CLARIFIER

Crane-Type Sewage Clarifiers—Their Operation and Lubrication

By M. C. FLEMING
Sanitation Department, Hardinge Co., Inc., York, Pa.

THE Hardinge rectangular tank clarifier mechanism consists of a crane spanning the tank and traveling back and forth along the long dimension of the tank. The sludge collector and scum skimmer is supported from the crane. It is driven by a small motor, and its operation is such that the sludge scraper moves the settled sludge into a sludge hopper or hoppers at the influent end of the tank. The skimmer collects and delivers all scum and floating material into a transverse scum trough near the effluent end.

The rate of movement is 3 feet per minute and the equipment is entirely automatic in operation. The direction of movement of the crane and the operating positions of the sludge scraper and the skimmer are changed when stops located at the ends of the rectangular tank are engaged.

At the new sewage-treatment plant at Highland Park, N. J., two such mechanisms are installed in rectangular settling tanks, each being 26 feet wide by approximately 90 feet long. The machines are operated approximately five hours per day. Sludge is pumped from the sludge hoppers, and scum and floating material from the scum trough, twice a day. The motors driving the machines are ball-bearing motors, and the motor manufacturer's recommendation on motor lubrication is that the grease be changed annually in the ball bearings. Lubricant approximating 600-W is used in the speed reducers during the summer, but a lighter oil is recommended for winter use, owing to the fact that the machines are operated only part of the day. Lubrication at other necessary points on the mechanism is done weekly with cup grease through Alemite connections.

Overlapping Assessment Districts Number Over 6,000

BETWEEN six and seven thousand overlapping assessment districts, in which property is assessed more than once, exist in the United States, according to a report by the National Association of Assessing Officers.

Athough overlapping assessment districts, which should be distinguished from overlapping tax districts levying taxes upon the same property, are generally considered to be expensive, annoying to taxpayers and frequently an obstacle to good assessment and proper equalization, the majority of them have existed for many years. Reason for their existence may be any one of the following:

1. Desire by a city within a county for a higher assessment level than the rest of the district, in order to support a certain tax levy or debt load, or to produce a low tax rate which will attract residents and industries.
2. Desire for a lower assessed valuation than the primary district's, as a curb against public spending and debt incurrence, or as an attraction to industry.
3. Belief that the overlapping district's government can produce a more equitable assessment than the primary district's.
4. More jobs to reward party workers.
5. An expression of political independence.

There are three ways listed by the Association's Committee to abolish overlapping assessment districts:

"One method is to require the district to use the assessment rolls of its primary district as the basis for its tax levies. Another is to make each overlapping district a primary district. . . . Finally, when the area of an overlapping district includes most of a primary district, the governments of the two districts may be consolidated into a single unit."

3 Generations of ETNYRE Street Flushers Used By VICKSBURG

1915 . . . . . 1924 1936

READ REMARKABLE LETTER FROM MR. J. M. BUCHANAN

President, Board of Aldermen

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VICKSBURG . . .

FAMOUS for Clean, Sanitary Streets, replaces sweeping with Etnyre Sanitary Flushing.

. . . Costs are less

. . . Bacteria germ-count greatly reduced

. . . Fine, "flying dust" eliminated

. . . Flush storm-sewers every day

. . . Removes sewer-gas odors

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Do As Vicksburg Does!

. . . FLUSH your streets spotlessly clean—at lower cost with an Etnyre Sanitary Street Flusher. Send for catalog No. A-305.

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Oregon, Illinois, U. S. A.

CITY OF VICKSBURG

J. C. HAMILTON, MAYOR — J. M. BUCHANAN, ALDERMAN, PRESIDENT OF BOARD

VICKSBURG,
Miss., February 19th, 1936.

E. D. ETNYRE & CO.,
Oregon, Illinois.

Gentlemen:-

The City of Vicksburg acquired its first ETNYRE Flusher, 600 gallons tank capacity, with 2 front nozzles and 1 on side, mounted on Federal chassis in Dec. 1915. I drove this flusher from day it was unloaded until May 7th, 1924, when the City acquired its second ETNYRE Flusher, of 1500 gallons capacity, mounted on a Kelly-Springfield chassis.

This ETNYRE Flusher had 2 nozzles at front and 1 on each side; the additional nozzle, at side enables us to flush entire street width in one trip through, and was capable of doing a good, clean job with 4 nozzles on street 40 feet wide. It was used daily on our 30 miles of paved streets; operated by one driver and one assistant for re-loading of tank.

On the 1st of Sept. 1936, we purchased and are using our third ETNYRE Flusher, of 1500 gallons size, mounted on 5-ton GMC chassis.

Prior to purchase of our first ETNYRE Flusher, our streets were swept by sweepers. I have found that the use of ETNYRE Flushers has cost us less to purchase and maintenance cost is very greatly reduced.

The method of sweeping caused the flying of dust and the germs or bacteria count was very high. With the use of ETNYRE Flushers we have greatly reduced bacteria count as well as eliminating "flying dust". With our Etnyre we also flush our storm-sewers daily, which removes all sewer gas or odors arising from our catch-basins, located along the gutter line.

It is my opinion, based upon 22 years experience with the Etnyre, that if and when better flushers are built, ETNYRE will build them.

Yours very truly,

J. M. Buchanan,
M

New York Municipal Utilities Put on a Sound Basis

By HARRY BARKER
Barker & Wheeler, Engineers, New York City; Advisory Engineer of the Municipal Electric Utility Association of New York; Consulting Engineer, Vermont Public Service Commission

THE progress made during the past two years in reorganizing the accounting and engineering procedures of the municipally owned electric utilities in New York State, to get these enterprises running on a real business basis, is one of the outstanding achievements in public-regulation and technical-association fields during recent periods. The step was initiated by the Public Service Commission; the move was steered along practical lines by the cooperation of the State Association of Municipal Electric Utilities; and the project has been kept going toward definite ends by continued pressure of the Commission and Association, each in its own way.

Of course, only the comparatively few municipalities which started out early have completed all the underlying work, have installed successful routines, have trained their personnel and have displayed the assurance which the new knowledge gives them. But the others are on the way and can be expected to be straightened out in due time, if the Commission continues to prod the laggards. While private utilities the country over are still debating such subjects as the principles of valuation, original-cost (meaning "aboriginal cost") determinations, perpetual-appraisal control, depreciation reserves, and other matters involved in state and Federal demands, these municipal managers have sunk such worries and are more serenely rolling along. It is true, these municipal utilities are comparatively compact and simple. As systems go, they are greatly decentralized when compared with complex public utility corporations and their fanlike company, district and community organizations, where the intricacies of accounting, engineering and administrative procedures are almost beyond the complete grasp of a single person. (Perhaps success here gives a hint that the private corporations could well investigate the benefits of decentralizing their troublesome problems.)

The New York movement started from the new "Uniform System of Accounts for Municipal Electric Utilities," prescribed by the New York Public Service Commission two years ago after a long period of study and conferences. This system is based on the corresponding codes or classifications prescribed for privately owned utility corporations, but considerably changed to adapt it to the peculiarities of municipal ownership in that state. This system, or classification, requires amongst other things that the larger municipal utilities employ (1) a modern work-order system controlling construction work, (2) a "continuing-property record" system or perpetual plant inventory and appraisal on an original-cost basis, and (3) various statistical records of those kinds of plant and property which come in large numbers of repetitive units—poles, conductors, service loops, transformers, meters, etc.

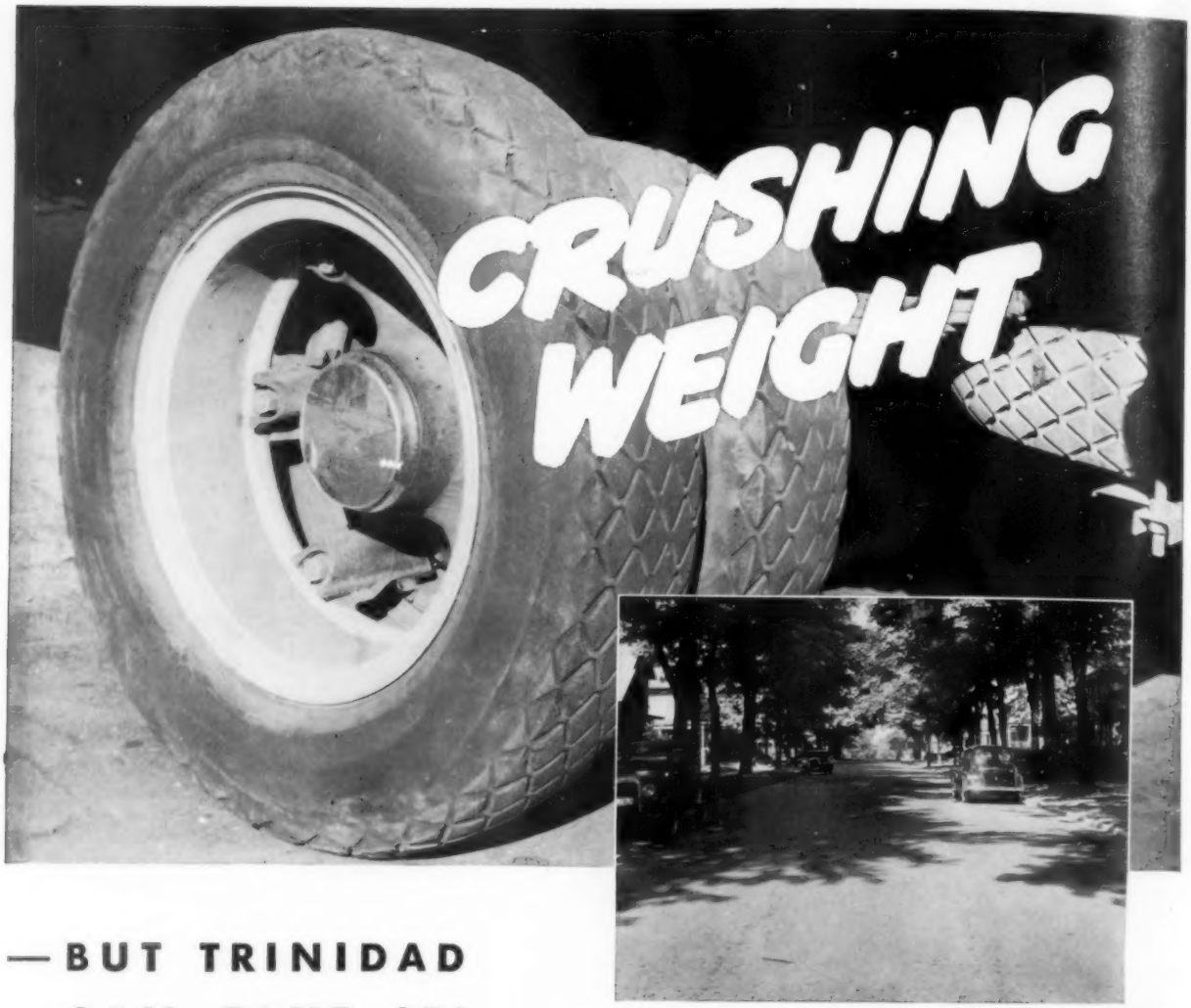
The requirements imposed on the smaller utilities, as actually stated, appeared easier, but still the accounting results demanded were strict enough so that the only certain way of keeping up with them year after year is by use of work orders, perpetual appraisals, and statistical files. It has turned out that such systems can be kept simple and need not be too burdensome for any but the very smallest and most informal departments—say, except for those below $20,000 gross annual income. The small utilities have a volume of accounting work that does not make machine accounting economical over hand-posted books. But it often proves surprising at what point speed and economy prove out with machine aids in dispatching the business.

From Chaos to System

All this new procedure is more or less in acute contrast with the arrangements prevailing before in nearly every one of the state's municipal systems. There were all degrees of organization and systematization, but even in some of the largest operations in the state there were conspicuous shortcomings of organization, personnel or accounting procedure. In some small places, all the electric system expenditures have been chaotically mixed in a general disbursement account along with fire hose, sewer pipe, water pipe, policemen's badges, paving pitch, sidewalk concrete, band concerts, and relief supplies. There has been usually everywhere a clear record of kwh sales and billings, but sometimes there were hundreds, sometimes thousands, of dollars in forgotten delinquent accounts. The Public Service Commission has always required a considerably detailed form of annual report which apparently suggested the use of a uniform classification of accounts, and a genuine accounting layout; but this requirement seemed to have resulted, until recently, mostly in an annual display of last-moment accounting activity of the saw-and-hatchet variety.

Plan Fits All Plants

There are a few essential ideas which have been employed to enable these municipal utilities to operate soundly as business institutions. These have been and can be adapted to various types of municipal government organization. Indeed, where there is the will to run the municipal utility right, a way can be found under almost any charter or form of municipal organization. The village, borough, or city governing board (mayor and board of trustees, aldermen, burgesses, commissioners, etc.) can act as the directors of the utility, or, if they see fit, there can be a board of electric utility commissioners who do not have



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THE BARBER COMPANY, Inc., Dept. AC-3, 1600 Arch Street, Philadelphia, Pa.
Please send me complete information about the Barber Products checked below.

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- ☐ GENASCO BLOCK AND JOINT FILLER — For brick and granite block streets.

to labor over any other municipal problems.

Hard-Working Supervision

A properly run electric utility requires a lot of planning and executive effort, for vigilance is demanded on keeping revenues up, operating expenses down, and rate schedules responsive to the needs of the customers. Even with a most active and intelligent general manager, the governing body must expect to double the work they have to do with the usual public works, public safety, and welfare departments. For all those situations where the demands on the governing body are severe without the electric utility, the organization of a board of electric utility commissioners with delegated powers is a sound plan.

There should be some one person, no matter what title he is graced with, such as superintendent, manager, or commissioner, who should give most of his time to the coordinated administration of the electric utility. If the electric system and the municipality are not too big, he can be superintendent of water supply also. It is usually better that he should not be overloaded by being responsible for all public works generally. It is usually too loose an organization to have a superintendent of production or generation, a superintendent of distribution, and a commercial manager, all reporting separately and uncoordinated to the utility board of direction. It generally multiplies the unfortunate results of not having a coordinating general manager if the utility board of direction is also the general municipal governing body.

Where the municipal clerk and treasurer have definite and broadly inclusive functions prescribed under a municipal charter, it is usually possible to adapt to that situation a sound electric-utility business procedure without hamstringing the conduct of the utility. The will to do the job is the important thing; a resourceful cooperative personnel can overcome almost any local handicap if given a little help.

It has been stated that a few essential ideas needed to be, and could be, followed regardless of the detail of municipal government organization. This does not mean, however, that there is a ready-made scheme of engineering, accounting and administrative detail which fits all situations like the ancient Mother Hubbard wrapper or some more modern counterpart. The garment needs tailoring to each frame.

What Is Needed

First, as the size of the utility increases, there needs to be an increasingly definite organization of production, distribution, consumers' service (this last covering metering, meter testing, meter reading, complaints, changes, etc.) and commercial work. Responsibility must be distributed; authority bestowed must be adequate to meet the responsibility; inter-divisional cooperation must be induced.

Second, there must be a definite system of accounting. Most states have a code, or system, or "classification" of accounts and accounting that applies or can be adapted to municipal utilities. This as a secondary effect will need some definite office and operating routines.

Third, a "tight" control is needed on materials and supplies kept in stock. Any electric utility uses a comparatively large amount of materials in the operation, repair and construction of its diversified and extensive property. This requires very sizable stores. These cannot safely or comfortably be handled haphazard, and a simple perpetual inventory is possible without burdensome expense. Some definite person must be responsible for stores which should be under lock and key—not for fear of dishonest employees, but to enforce a little system in handling valuable supplies. This person on a small system does not have to be an all-time storekeeper. New stores and salvaged materials should be registered by the person serving as storekeeper, and reported in the accounting routine. All issues should be governed by use of debit tickets, which in the smallest and simplest systems are only organized memoranda from a person acting in one capacity to himself in a dual capacity—but nevertheless providing a very definite and effort-conserving accounting mechanism. "Post-mortem" accounting for stores issues, retirements and salvage receipts, according to a foreman's recollection or scratch-pad, envelope-back record, is particularly apt to give poor results in keeping costs of operation or construction.

Fourth, time spent by various employees should be conscientiously reported by type and location of work, in such detail as may be needed to distribute costs according to the requirements of the accounting code. This reporting should be done on definite forms made up day by day while the distribution is fresh in everyone's mind; after 24 hours the mental pictures of work details fade rapidly. Any fudging to make the figures look better on a particular job or for a particular stretch of time eventually will fly back home to roost and embarrass the workmen, foreman, superintendent and management. Here, particularly, do honesty and sincerity eventually pay.

Fifth, new construction should be done under a work-order system. One feature of such a system is that every important job has a title and number, and a definite place provided in the accounts and files. An essential aim is to have all material and time expended on a given job charged to its work-order temporary account, and all papers like time reports, material tickets, invoice copies, etc., land in the corresponding work-order's file. When the job is done and all delayed charges are corralled, the work-order account is analyzed, corrected, closed, and the accumulated expenditure transferred to the proper permanent fixed capital account for that kind of property created, such as generating plant, poles, conductors, substations, consumers' services, or what not. The interminable run of small jobs can be charged to "blanket" or "running" or "permanent" work-orders which are closed out periodically when the accumulations warrant. Costs of material and labor for operation and maintenance usually do not need work-order control but are directly charged to proper expense accounts. Nevertheless, most modern account classifications, as prescribed or voluntarily adopted, require considerable attention as to reporting where and upon what kind of property the work of operation or maintenance was done.

"Continuing-Property Record"

It is a logical step from the work-order to a perpetual original-cost appraisal of plant and property, or a "continuing-property record," as the New York Commission has termed it, since the work-order leads at once to easy development of the number of property units created and the cost of each unit. The mechanism of the continu-

AMAZING PERFORMANCE

THE NEW "99" MOTOR GRADER DRIVES & STEERS ON all 4 Wheels

IN SAND • AROUND SHARP CURVES IN GUMBO • IN DEEP SNOW— *Wherever the Going Is Tough*

Performance records demonstrate conclusively that the A-W "99" will outperform on any highway job . . . grading, ditching, oil mix, etc. Here's a typical example: On a southern road job . . . through "ball-bearing" sand where several different motor graders had failed . . . the No. 99 handled the entire mixing (sand with asphaltic oil) without faltering. The revolutionary features which enabled the A-W "99" to handle this job . . . which are making motor grader history in every section of the country . . . are:

ALL-WHEEL DRIVE: With every ounce of weight on a driving wheel, the "99" develops MORE TRACTION . . . puts more available power to work . . . Front wheels climb up and over to exert a powerful pull on the blade. ***CONTROLLED TRACTION:*** An exclusive feature whereby wheels and frames are offset to EFFECTIVELY NEUTRALIZE blade side draft. In this position a driving wheel tracks immediately in front of or behind each end of the blade to BALANCE the load. ***ALL-WHEEL STEER:*** Front and rear wheels can be steered separately or together — in the same or opposite directions . . . an extremely useful feature wherever the work area is restricted.

The design of the "99" eliminates frame twist. Blade never leaves floor of road, even on 30 degree curves. There is no gouging at the toe . . . no wasting at the heel. Blade can be shifted under the heaviest load without dipping or tilting at either end. Quick-acting hydraulic controls . . . precision built and perfected by Austin-Western . . . provide accurate adjustment under all conditions. Mail coupon for complete details.

THE AUSTIN-WESTERN ROAD MACHINERY CO.
Aurora, Illinois

6 BASIC PERFORMANCE-IMPROVING FEATURES

. . . enable the A-W "99" to exceed all previous standards of Motor Grader capacity, stamina and economical operation.

1 ALL-WHEEL DRIVE **2** ALL-WHEEL STEER **3** CONTROLLED TRACTION
4 STABILIZED FRAME **5** PRECISION SIDE SHIFT **6** FULL HYDRAULIC CONTROLS

AUSTIN-WESTERN

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1802 Barrows Street, Aurora, Illinois
Send me your new "99" Motor Grader Catalog No. 1710.

Name.....
Address.....
City..... *State*.....99MG808

ing-property record is a loose-card or loose-leaf catalog of property units with unit costs attached, each card or leaf being devoted to only one type of unit. A continuing-property record that is not interlocked with the fixed capital accounts has little chance of continued success. To start off the perpetual property record, a basic inventory and appraisal on a definite date is required.

The large and medium-sized utility cannot satisfactorily meet the requirements which it inevitably will have to face, without a continuing-property record. The small utility may get along with only a good work-order system, but the additional effort to carry the perpetual appraisal is so small that this last is being widely accepted. If it is used, there is little delay or expense at any time of showing just what the property is by classes and units, in what tax districts it is located, and what are the segregated investments. With merely the work-order system operative, the books of account still reflect only money changes, while the data as to units added or retired, and the unit costs, are buried in the project files. Future retirements will require search in these files. In event of need like a rate case, there is the accumulated work of gathering up these files, analyzing them and classifying the changes in property and money. In preparing for a genuine rate study, the absence of a good work-order system makes a wholly new basic inventory and appraisal necessary every time with attendant delay and expense. The existence of a continuing-property record system at such a time eliminates the need of a new inventory and appraisal. The existence then of only the work-order system and an old basic appraisal with no continuing-property record, gives delay and expense about midway between the extremes.

Meter Testing

Electric utilities are practically 100 per cent metered, and the proper care and records of meters are important features of a good operating plan. The meters should be adjusted, tested, and set up on storage racks as received new. Old meters coming from prior installation need cleaning, examining of bearings, coils and magnets, and perhaps testing before going out again. Every meter should be tested in place in its new location within a month and once each two to six years, depending on its size and type. There should be history card records of each meter, each service location, and each consumer as he has moved around. Convenient combinations of such records are possible under various governing situations.

Meter Reading

The meter reading should be arranged in routes by streets, but laid out so as to minimize travel. It is economical of the billing clerks' time to have each route book hold a normal day's readings as far as possible. Where there is a considerable area of "thin" territory to be covered with excessive travel between consumers, some of these districts can be grouped together for a reader with a light car. It is much cheaper to pay a meter reader a car allowance and get him over the thin territory at fifteen miles an hour than to pay him for excess walking at a rate of three miles an hour. Of course, each meter location should have a number—the billing or consumer's account number. A careful field survey needs to be made in laying out a reading route to allow for all possible expansion between presently assigned numbers.

The billing, collecting and revenue-accounting routines can be comparatively simple and still meet every need. The tendency of the systems in some places is to build up a procedure which is unnecessarily cumbersome with transfer, copy and summarizing operations that add mostly errors, delays, and expense. It is illuminating on ordinary operations, to develop, along with the billing, an analysis of kwh by classes of service and rate steps. If properly planned, this analysis takes only an insignificant amount of time, and that distributed so as to create no burden. Such an analysis is essential for a new rate study, and if a year's sales have to be analyzed all at once, there is a delay of several weeks with attendant expense for extra help.

Easy and Worth Doing

For the various results outlined, nothing magical is needed, not even anything startling. It needs merely organized effort at general cooperation and at recording where the money comes from and goes to. It requires a little system and some definite routines adhered to, but prompt service does not need to be held up by martinets. Any such system demands common sense and perspective in limiting details to genuine essentials, and securing them directly without that spurious elaboration which deserves the epithet "red tape."

Six Cities Pledge Financial Aid for Low-Rent Housing

AT least six local governments have already pledged appropriations for low-rent housing projects in the 1938 program under United States Housing Authority financing, the National Association of Housing officials announced on February 24. Although no commitments will be made until contracts are entered into with the Federal Authority, these municipalities are among the first of the 93 with Housing Authorities to make definite fiscal plans for participation in the new decentralized program.

Knoxville, Tenn., by resolution of its City Council, has pledged to raise $200,000 as the required 10 per cent of project cost. Charleston, S. C., has taken similar action with respect to a $900,000 housing project. The Philadelphia Housing Authority received an appropriation of $13,000 from the city and $25,000 from voluntary contributors, and is planning to sell housing bonds to a quasi-public corporation in charge of trust funds. The Allegheny County Authority operating in the county area outside Pittsburgh and the Bridgeport, Conn., Authority have each been given $10,000 for administrative expenses.

New York City, which has promised to purchase Housing Authority bonds with city trust and retirement funds, has also heard a proposal of Mayor LaGuardia that would insure a continuous program of assistance to low-rent housing, the Association reported. Under Mayor LaGuardia's proposal the initial step would be an appropriation of $500,000 to guarantee interest at 3 per cent on some $16,000,000 of local Housing Authority bonds. The appropriation would increase from year to year, to a maximum of either ½ of 1 per cent or 1 per cent of the total annual budget. As the bonds are amortized, savings in interest would be available to apply to interest payments on further loans. This plan is designed to provide funds for $300,000,000 of new housing for the city of New York during the next ten years.

South Bend
Street Flushers

CLEAN *Under* PARKED CARS *and* REMOVE FLYING DUST

A big problem in street-cleaning is to clean the surface under parked cars. Modern Street Flushers solve this problem in the best way possible—sending all waste into the gutter—washing UNDER parked cars. Flushing is economical. Operation is simple and easy. Streets are flushed clean, sanitary and healthful with WATER—"Nature's greatest cleanser." Investigate SOUTH BEND Flushers Now.

A modern, motorized street flusher washes ALL the dirt away—not only the heavy debris, but the fine dust that blows and swirls, raising havoc with pedestrians, sifting into stores, offices and windows; making life miserable for housewives in homes. Flying dust is a menace to health. City streets are cleaner—more sanitary and healthful—and equipment and maintenance costs are less, when SOUTH BEND Flushers tackle the job!

Write Municipal Supply Company, South Bend, Ind., for complete information

Reducing Unaccounted-for Water

By FRANK J. BROZ
Superintendent,
and
GEORGE DIAMOND
Engineer,
Water Department, Cicero, Ill.

ONE of the essential factors in maintaining adequate service pressure is to preserve as nearly as possible the original tightness of a water-distribution system. To accomplish this purpose, the town of Cicero, Ill., has organized a crew of two engineers and six assistants who are specially trained in the technique of measuring and locating underground pipe leakage. District surveys are made regularly, and the principal methods for locating leaks involve the use of the rod meter, 1- and 2-inch meters, Aquaphone detectors and a Geophone. In addition to the underground leakage survey, a careful examination of all inside piping, plumbing and meters is being made by a plumber employed by the Department.

Leakage Surveys Finance Improvements

Underground leakage surveys, resulting in an average water-saving of 3 million gallons daily, not only have afforded appreciable immediate financial return, but also play an important part in helping to meet the financial program because of the recent water-works extension project completed with PWA assistance. This program included 20 miles of new mains ranging in size from 30-inch to 8-inch, a 1-million-gallon elevated storage tank, the placing of 580 new hydrants, and the installation of an automatic pumping station of the latest design. The cost of the improvement ran upwards of $1,300,000, so that any saving in unaccounted-for water tends to lessen the burden of the Department. In addition, regular maintenance costs are reduced because every leakage survey includes an inspection of all valves, hydrants and service pipes on the mains tested, and thus defects may be located and the necessary repairs made.

Survey Methods

The town is divided into eight major districts. Each district is valved off so that one line may feed the entire district. On this line is installed a set of taps. The first step is to measure, by means of the rod meter, the entire district for a 24-hour period with all services open. A reading is taken every minute for the 24-hour period. A curve is drawn showing the maximum rate in gallons for 24 hours, the minimum night rate, and the total consumption. It is then possible to determine the importance of further investigation of the district. Taps are placed in convenient locations inside the district so that the major district can be subdivided into two- to four-block sections. A 1-inch tap is placed on either side of the valve, and the water is passed around the valve through a 2-inch meter. All house consumption is eliminated by shutting off service lines at the curb so that the measurement includes only unmetered water. From one gaging point it is possible to measure a mile of pipe, depending of course on the size of the main. After all live services are shut off, valves are then closed at five-minute intervals and the readings taken, which will show the loss between valved-off sections. Rates are then determined which will indicate the method needed to locate and account for the rate.

The first step in locating leaks is to listen with an Aquaphone on valves and hydrants. Oftentimes a noise on a hydrant will indicate not only a hydrant leak, but a service or joint leak on the main. Next, by listening on the curb cocks it is possible to tell which one is leaking or the possibility of a corporation leak or a leak on the main itself. Upon digging up the place where the leak is indicated, it is possible that a leak will not be found, even though a loud noise is noted on the service line. We then try the curb cocks directly opposite this point and determine which is the loudest. Then the Geophone is used on the surface of the pavement directly over the main and by process of elimination the leak is pinned down. The leaks after being located are dug up by WPA labor, and repairs are made by local licensed plumbers. Through experience we have found that 85 per cent of our trouble occurs on service lines and 15 per cent on the mains.

Causes of Leaks and the Remedy

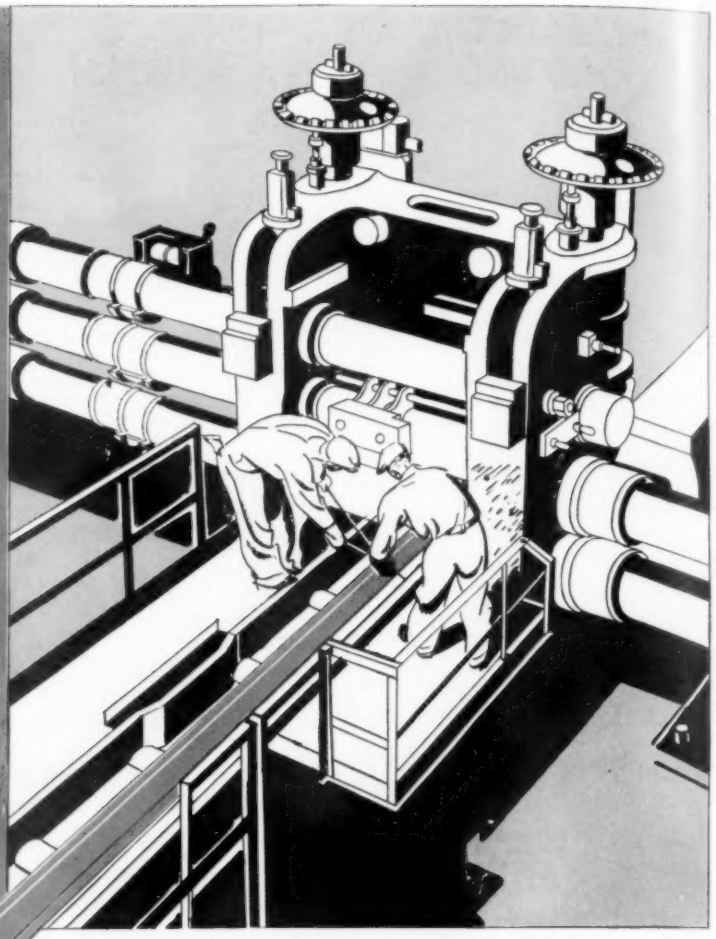
Any number of causes for leaks may be given, some being typical of the section of the country they occur in. One very common cause seems to be the failure of plumbers to allow the proper amount of slack in lead pipe at the corporation cock, which should form a 10-inch gooseneck. When the ground settles, the wiped joint will not withstand the pressure of the earth and will crack off. In the new town ordinance now being drafted, steps are being taken to eliminate this trouble. Our plan is to specify that the tap be made horizontal to the main, and a 2-inch cast iron pipe casing be installed to extend from the main and cover the service 2 feet out from the main. In this way the corporation cock and the wiped joint on the corporation coupling will be protected from earth settlement. Another common cause of breaks is the improper tinning of pipe in preparation for the wiped joint. This has now been entirely eliminated through rigid inspection.

Recent Improvements

With the financial assistance of the Public Works Administration and under the supervision of Chas. De Leuw and Company, engineers, the extensive improvement pro-

HIGHWAY MEN!

. . here's help for bridges that are behind the times



Bottlenecks caused by narrow roadways, safety factors limiting permissible live loadings, inadequate facilities for pedestrians; have some of your bridges developed complaints like these? Alloys of Alcoa Aluminum may offer the remedy.

The major load that a bridge has to carry is its own dead weight. Make a considerable reduction in that weight, through the use of Aluminum for many of the parts supported, and your problem is solved. Roadways can be widened and walkways provided, while safety factors in existing supporting members are maintained. Thus, at a fraction of the cost of a new bridge, the old one is made to meet modern traffic requirements.

This same principle applies to new construction of bridges with long spans. Total costs may be materially reduced by the savings on piers and supporting structures made possible by the lightness of properly designed floor systems of Alcoa Aluminum Alloys.

Aluminum floor structures, walkways and railings have demonstrated their economic worth in bridge construction. Our engineers are anxious to work with any bridge designer who is wondering how he can employ Aluminum, to advantage, on new or existing structures. ALUMINUM COMPANY OF AMERICA, 2172 Gulf Bldg., Pittsburgh, Pennsylvania.

ALCOA · ALUMINUM

gram mentioned before has been completed.

A modern pumping station was constructed, and a 1,000,000-gallon elevated storage tank, which eliminated the three pumping stations that were formerly used. Four high-efficiency electrically-driven centrifugal pumps were installed: one 10-mgd pump; two pumps capable of pumping 5 mgd each; and one pump capable of delivering 3 mgd. These pumps are controlled by a Westinghouse automatic switchboard which, through the use of pressure switches, will automatically cut in or out of service the proper sized pump or pumps as the consumption increases or decreases, thereby maintaining a constant pressure of 45 pounds. Through careful planning, with regard to friction losses and differences in elevation, uniform pressures are maintained throughout the town.

The 20 miles of new 8- to 30-inch main is installed solely to improve the distribution of water. No taps except sprinkler system lines are allowed on these mains. In making the underground leakage surveys we measure through these lines and in that way eliminate about 45 per cent of the ordinary operation, and a greater part of the inconvenience to the property owner.

The importance of eliminating unaccounted-for water cannot be too heavily stressed. The success of the Water Department and the payment of the loan for the recent water-works improvements are very dependent on keeping unaccounted-for water at a minimum. Cicero received an outright grant of $125,000 from PWA and issued water revenue bonds in the amount of $990,000 to pay for this improvement.

Collecting for Water Used

Knowing the importance of keeping a watertight system of mains and services, we know it is equally important to account and get *paid* for the water distributed to consumers. This we have done to the extent of 82 per cent of the total purchased from Chicago for the period beginning January 1, 1937, and ending November 1, 1937. The methods employed in accounting for this percentage, are as follows:

First: Installation of the proper size and type of meter.

Second: Using the battery system of disc meters instead of compounds.

Third: Inspection and accuracy control of meters on monthly accounts on 1-inch and larger meters.

Fourth: Periodical testing of ⅝- to 1½-inch sizes, and the annual testing of 2-inch and larger meters.

Fifth: Repairing meters properly so as to insure accuracy on small rates of flow.

Sixth: Control of fire-line services by metering.

The proper size and type of meter is determined by the use of a recording register, which gives the maximum and minimum gallon demand on such service.

We obtain more revenue from the battery installation of disc meters than by using compound meters. Also, by doing so, our customer's service is never disturbed; he has service at all times. We eliminate working after hours, Saturday afternoon, etc., and the payment of overtime to our employees engaged in such work. We are now using a back-pressure valve set at 2 pounds, installed on the outlet of one or more meters. This arrangement confines the small flows to one meter in the battery.

We employ two men, specially trained, whose duty is to keep all meters on monthly accounts, that is, 2-inch and larger, as nearly as possible to the 100 per cent mark. We have at the present time 545 meters on monthly accounts.

Our latest method calls for a periodical test of ⅝- to 1½-inch meters, inclusive, every five years, and in less time if the consumption reaches a point where the meter should be removed for inspection, repair and test. We are guided by a chart showing the maximum yearly registration allowable in all sizes of meters, also a chart showing the registration at which meters should be removed for inspection, repair and test.

The men in charge of meter repairs have had special training in their work, and no meter leaves the Department until it has fully complied with the American Water Works Association Standard Specification tests, which we believe are too liberal.

The only way to control fire-line services is by the use of meters approved by the Board of Fire Underwriters.

We are now building a meter shop, and when completed it will include testing equipment capable of testing up to the 6-inch meters. It will be possible to cut down the Repair Department expenses with the installation of a test bench capable of testing eight ⅝-inch or six 1-inch meters at one time. It is our earnest desire to be able within a short time to account for more than 82 per cent of the water which we purchase from Chicago.

Summary

A saving in purchases of water from the city of Chicago for a period of 10 months (January 1, 1937, to October 31, 1937), as compared to the like period of 1936, in the amount of $31,936.40, or 62,620,400 cubic feet of water, has been made. Reduced to daily savings, it means that we are buying 171,563 cubic feet (1,286,722 gallons) less water each day.

Sales have increased $20,598.34 during the 10-month period over the first 10 months of 1936.

ACKNOWLEDGMENT.—From a paper presented before the Wisconsin Section, American Water Works Association.

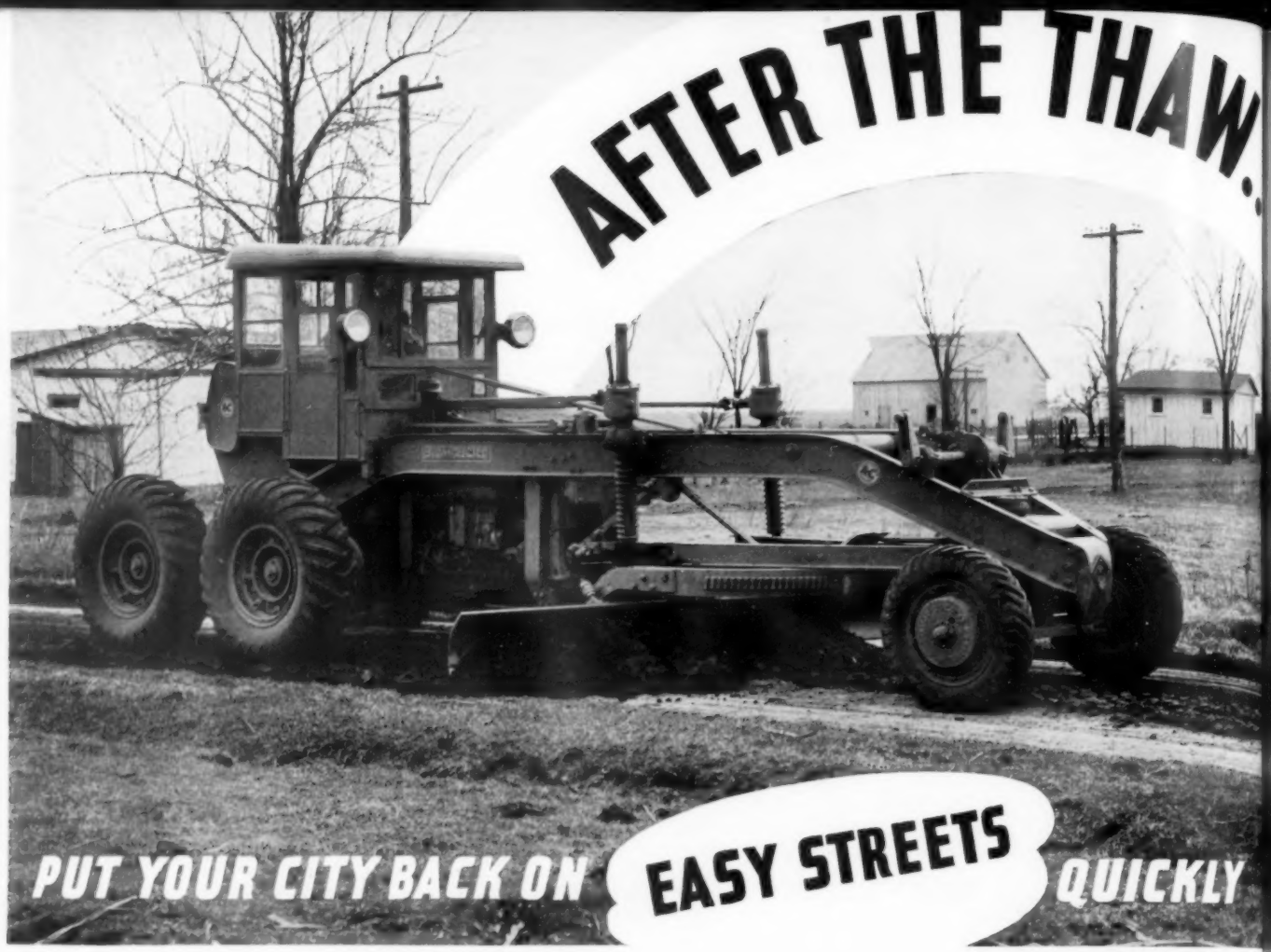
A National Mortgage Association

AT THE request of President Roosevelt, the Reconstruction Finance Corporation has organized The National Mortgage Association of Washington, with a paid-in capital stock of $10,000,000 and a paid-in surplus of $1,000,000. The Directors of the Association are: C. B. Henderson and Emil Schram, Directors of the RFC; Robert V. Fleming, President, Riggs National Bank, Washington, D. C.; Claude E. Hamilton, Jr., General Counsel of the RFC; and W. C. Costello, Assistant to the Chairman of the RFC. In a statement issued February 10, Jesse H. Jones, Chairman of the Reconstruction Finance Corporation, said:

"The organization of this National Mortgage Association completes the machinery for making available immediately the facilities and benefits of the new Federal Housing Law, and this Association will invest in first mortgages insured by the Federal Housing Administration and sell its debentures against them.

"The President has also requested that we hold in reserve an additional $40,000,000 for the capitalization of other national mortgage associations, or for increasing the capital stock of The National Mortgage Association of Washington.

"It is hoped that builders, material and supply people, and workmen in the building trades will cooperate generally in a building program that will produce homes at the lowest possible cost, thus increasing employment and stimulating business."



Winter-ruined streets, left rutted and chuck-hole pocked by the spring thaw . . . rough streets that are hard on autos, that fray the public's temper and hurt your city's trade . . . these can be quickly smoothed and made into easy-to-travel streets by Allis-Chalmers Speed Patrols. Built for heavy-duty service, the Speed Patrol provides plenty of power and traction to "whip" stubborn ruts into shape . . . to eliminate all waves and leave a smooth surface. Proper weight distribution—with center engine mounting—gives the Speed Patrol more effective blade pressure . . . holds the blade to its work, prevents side-slipping and makes steering easier. Your operators get more done with less fatigue. Leaning front wheels make for easier ditching. Wide range of speeds (from 2.3 to 10 m.p.h.) increases flexibility and makes available a correct speed for each job. Stout, all-bolted construction assures complete wear take-up, longer life and lower repair cost, consequently, less final cost to the taxpayer. Ask your nearest Allis-Chalmers dealer to show you how Speed Patrols can smooth out winter-roughened streets and keep them smooth.

ABOVE
Chenoa Township, Illinois, smooths out winter ruts with a No. 54 Tandem Drive Speed Patrol.

SINGLE OR TANDEM DRIVE ... NO. 42 AND NO. 54 SIZES ... GASOLINE, DISTILLATE, DIESEL FUEL

ALLIS-CHALMERS SPEED PATROLS

TRACTOR DIVISION—MILWAUKEE, U. S. A.

Eliminating Business-District Congestion in Toledo

Full Experience Without Parking Meters—and With Them

By PAUL S. ROBINETTE
Traffic Engineer, Toledo, Ohio

HAD the subject which I am to discuss been assigned to the late Calvin Coolidge, he might have disposed of it with a terse "They like 'em!"

In the beginning, and up to November, 1936, B. M. (Before Meters) Toledo, like most cities of her class, had a parking problem. Close concentration of the central retail, financial and professional business locations, in a tight area of approximately four city blocks square, penetrated by streets of widths varying from 36 to 48 feet, and with block lengths averaging slightly less than 300 feet east and west and about 600 feet north and south, made the demand for curb parking facilities acute.

Furthermore, on the east, access to or egress from this area is prevented by the Maumee River, a wide navigable stream, uncrossed by any bridge leading directly to or from the business district. This physical condition causes the movement through the district of a large amount of traffic which otherwise could be by-passed. Practically every street in the district carries either street-car or bus traffic or both, and the complicated evolutions of these lines through the district in order to pass the front door of each of the large department stores in no way bettered the situation.

That was the problem. Concentration of business in a limited area, narrow streets in short blocks on which the incompatible demands of curb parking requirements and the need for a more expeditious movement of traffic battled it out.

Many Plans Tried

As in most cities, a solution was attempted through the application of many and varied regulations. A situation, purely local, resulting from some individual business need would develop. A special regulation covering it would be drawn up and applied at that particular point. Fifty feet farther down the street other conditions would require, and get, some other regulation—and so on, to utter confusion.

Had sufficient enforcement been available to enforce all these regulations throughout the business day, the system might have given satisfaction. But to enforce time regulations closely requires that the cars be checked as soon as parked, and, if over-staying their legal limit, that they be tagged shortly after the legal time allowance expires. The old system of chalking the tires meant two rounds by the officer, and the legal hour's stay often actually became three or more. The public are very observant and soon learned to note the rounds of the arm of the law, and even jumping the schedules didn't fool them very often. They also learned, quite rapidly in fact, that simply rolling a car a few inches after the chalk mark was applied was just as effective as driving around several blocks looking for a new hole to get into. This perpetual chase had no other than nuisance value. We know that a car occupies just as much space in one block as it does in another, and chasing the long-time parker from one point to another was futile in bettering conditions.

Severe Measures Ineffective

Despair of ever adequately enforcing the parking regulations led often to the application of unreasonable regulations. For instance, with the curbs parked solidly on certain streets, the need for making short-time vehicular stops led to quite heavy double-parking. The double-parking seriously handicapped traffic movements, particularly on streets carrying bus routes. To overcome this intolerable situation, parking on one side of the street was entirely eliminated, and the privilege of legally parking at the curb was withdrawn for the sole purpose of giving those persons who formerly illegally double-parked an opportunity to park again, illegally, at the curb and thus not interfere too greatly with traffic movement.

Ridiculous as it may seem, this move was absolutely necessary if the streets were to be kept open. Opinions may differ, but with the conditions then prevailing—that is, a form of municipal government in which ability to have tickets fixed was a matter of political patronage—a full regiment of the United States Marines would have had difficulty in giving adequate enforcement. Tickets meant little or nothing, and because of this the early birds took possession of the curb space and thereafter customers and others coming into the district either went into the lots or garages and paid 20 to 35 cents per hour of stay, or they parked far out of the district and walked in. Others confined their shopping to the outlying community centers and avoided the central area entirely.

Merchants and Motorists Dissatisfied

Dissatisfaction with the conditions was heard on all sides. The merchants found their places of business almost inaccessible. Receipt of merchandise and dispatch of deliveries were extremely difficult. People seeking parking spaces cruised the district, round and round, adding to the congestion, and often eventually giving up in defeat.

Came the dawn! First, the city threw off the shackles of the machine-controlled form of city government and adopted the city manager plan.

One of the first problems tackled by the new City Manager was an intelligent attempt to clean up the traffic problem in the congested area. Tag-fixing was immediately

Above: No. 101 truck-mounted Utility Spray Tank with Hand Spray patching hose in operation. Made in sizes 300 to 1200 gallons capacity.

Here Is What Users Say About Them

". . . fine results for patching and seal coating. We use them successfully for black topping new streets where they have laid either gravel or rock base courses. The short spray bar at the rear is used on most of this new work, and the Hand Spray hose is ideal for patch work. Both the Hand Spray hose and rear Spray Bar have proved indispensable in shoulder application and seal coating.

"With one of these No. 101 Spray Tanks, we now accomplish more work with a crew of five men and two trucks than we could do in a day with two crews of men with two ordinary patching kettles. We use it all the year 'round. The patching crew now can put in a full day and go longer distances, instead of waiting for a return trip to refill the small kettle. Every small city can do more work with one of these outfits without digging into their street fund."

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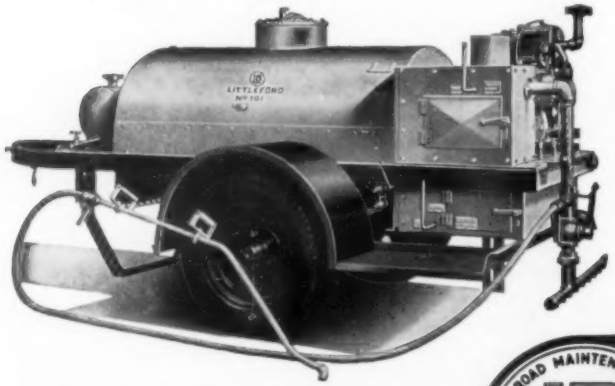

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stopped, and enforcement of the existing regulations was tightened all down the line. But, like other communities, we had had a depression in Toledo; in fact, our depression had preceded by about two years that of many other places. Through the depression the city had acquired what might be termed to be a *magnificent* deficit. Sinking-fund collections had been diverted to operating expenditures, bond payments had not actually been defaulted but were often delayed because of immediate financial crisis. To top it off, the citizens of Ohio, who in the lush days of the late twenties had voted for every bond issue submitted to them, suddenly decided, by an overwhelming vote, that instead of the former 15-mill limitation, a 10-mill levy was sufficient tax for real property to support.

Bond payments were a first lien on these reduced tax collections. General operating funds received what was left to be spread over all the city's services. It was impossible to place a sufficient number of policemen in the central business area to give an adequate enforcement of the parking regulations. This shortage of personnel prevented any definite improvement, even though tag-fixing was stopped and such enforcement as there was became more rigid. Limited to existing enforcement personnel, by restricted finances, the problem was to find some means by which this limited number of men could make their services more effective.

The answer was "parking meters." Through the use of this device, one visit by a police officer sufficed, where two were required before; consequently, the effectiveness of the available men would be doubled immediately.

The first step was to place these policemen on motorcycles so that:

(a) The district of each man was enlarged;

(b) Rounds could be made more frequently, with closer checking;

(c) Some of the men could be relieved for other duties.

Preparation

Analysis of the benefits of the metered plan of parking appealed to the City Manager and the Council, and thereupon suitable enabling legislation was enacted and 1,000 parking meters were purchased.

Meanwhile, the City Manager secured by ordinance the creation of a Traffic Commission charged with the duty of advising the administration on all matters of policy pertaining to the traffic problem. The membership consisted of six ex officio members from administration departments and nine lay members. A traffic engineer was appointed and by virtue of his office became both the secretary and the technical officer of the Commission.

No sooner was the organization of the Commission completed than the administration sought from it a determination of the policies and methods to be followed in the establishment of the metered parking system. Brief analysis demonstrated clearly that intelligent planning of the meter locations would lead to a correction of many of the impediments to traffic movements, for parking meters have a negative as well as a positive value, in that their omission at certain places prevents parking as definitely as they permit it where they are installed.

The objectives of the Commission's planning were:

(a) Freer traffic movements at or near intersections.

(b) Freer movements through the streets carrying street-car traffic.

(c) Simplification of parking regulations.

(d) Elimination of special parking privileges granted to various businesses through past years in efforts to adapt the old regulations to actual needs.

(e) Standardization of the legal parking-time periods.

Sharp protest greeted the proposition to install parking meters. The Automobile Club regarded it as another tax; the merchants assumed that their customers were to be driven from their doors; and the ever-present taxpayer maintained that the citizens in their ownership of the streets were entitled to the free use of them for any purpose.

Individuals who had previously been given special privileges immediately sought to insure the continuance of these same privileges under the meter plan. Under pressure from these various influences for special consideration, the Commission determined that before any definite program could be developed, certain yardsticks for measurement of conditions had to be established and certain policies had to be crystallized.

The Commission set forth the following as its philosophy:

1. The primary function of streets is to provide means for the *movement* of traffic.

2. Parking will not be permitted where open curb space is required.

3. After the needs of traffic flow and public safety have been satisfied, the remainder of the curb space is public property to be devoted exclusively to public parking.

4. Eliminating parking in order to provide special facilities for individual businesses will not be considered unless a demonstrable traffic hazard exists.

5. Financial benefits inuring from the meters' use should be subordinated to the needs of regulation.

The space assignments for the use of the streets under the system of metered parking was then determined as follows:

1. Approaches to intersections were studied, to provide ample space for multiple vehicular lane entry, for adequate visibility, and for unrestricted turning movements; no parking to be permitted therein.

2. On all streets sustaining street-car traffic, where the width of pavement was insufficient to permit of a moving lane of vehicles between the street-car lane and vehicles parked at the curb, parking thereon was limited to only the first half of each block directly beyond each cross-street intersection. This arrangement limited vehicular entry *into* the block to one lane of traffic, but permitted egress therefrom through two lanes, so that at no time was more traffic permitted to flow into the block than could be emitted at the other end, regardless of street cars, turning movements or other impediments.

3. Clearances for public safety were: (a) safety zones and bus stops; (b) hydrant spaces; (c) theater entrances; (d) public building entrances.

Formerly, any owner whose property contained stores, offices or apartments could have "Public Building Entrance" signs erected at one or more of his entrances. Were this privilege to be continued, there would be little space left where the individual might legally park. Where did a building cease to be private and become a "public building"? This answer was developed: Any building which by its size, character or occupancy is granted inside mailing service, either by box or by chute, by the United States Post Office Department, shall be considered to be a public building. Other buildings are not public buildings

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unless they house one or more active governmental agencies, city, county, state or Federal. This yardstick eliminated the charge of discrimination.

4. Hotel frontages, and locations where curb deliveries of merchandise were a physical necessity, and stands where constant movements in and out from the curb would present a hazard if parking were permitted, were restricted against time parking.

All the rest of the curb space throughout the area was then assigned to parking purposes, allowing 20 feet per stall for all interior spaces, and 18 feet for all stalls open on one end. The thousand meters thus located extended over an area formerly accommodating 1,600 cars.

This plan retired from parking purposes several hundred car spaces near or adjacent to intersections and safety zones. It stretched out the space usually occupied by one car from about 16 feet to 20 feet, facilitating parking maneuvers.

Fundamentals to govern the establishment of time of parking periods were decided as follows:

1. There should be no variation of the time periods within any one block. The average needs of each district as a whole should be satisfied rather than the specific needs of one or several business houses.
2. Timing should be simple, to avoid misunderstanding.
3. Time allowances should be as long as possible and still give a sufficient parking turnover as indicated by open stalls. Double parking from lack of open stalls would call for shorter periods.

On this principle, all meters were timed for 60-minute periods, except those for 5 blocks, or 60 stalls, in one street through the heart of the financial district, which were timed for 30-minute periods. These periods have proved satisfactory.

Parking Meters Installed

One had to see it to believe how completely the parking meters took command of the situation. One day it was bumper-to-bumper, and ill-tempered confusion; very soon it was lively movement in and out of the stalls all day long.

The long-time parker removed his car to a lot or garage or out of the district. The motorists now using the street facilities had business to transact there and usually did it quickly.

Where formerly 1,600 cars had been parked, with an average turnover of four times, making a total of about 6,400 parkings, the metered plan with only 1,000 spaces was accommodating at least 7,000 motorists who paid the fee, plus from 4,000 to 7,000 more who used time remaining on the meter. Actual checks have shown that, dependent on the district, each parking period serves from 1.5 to 2.5 cars. Seldom is a stall occupied to the full limit of the time by the original occupant.

Double-parking dissolved to an extremely low degree. It takes a hardy customer to double-park when space is available at the curb, especially when it is known that the street is patrolled at regular intervals by motorcycle officers.

Commercial deliveries were made easier, for the shopping load on the stalls seldom is heavy before 10:00 to 10:30 A.M. Commercial routes were covered in shorter time than ever before.

Bus traffic served as a comparative gage of our traffic-flow velocity. By request, exact running times of all bus schedules were compiled for the four weeks just previous to the meter installations, as well as for the four weeks after the meters were installed. The meter plan reduced their running times by an average of 9 per cent through the metered area. General traffic was of course speeded up to the same degree.

How did the merchants and motorists react to this system?

Well, if you were a merchant in business in Toledo and you suddenly found that your establishment was more accessible than before, that your customers could park close to you, that your goods came in and your deliveries went out with greater ease; that traffic by your door no longer was stopped by double-parking but now moved freely,—wouldn't you like the change? Our merchants do. I quote a letter from the Secretary of the Retail Merchants Association:

Mr. Paul Robinette, Traffic Engineer
Traffic Commission
Toledo, Ohio.

At a meeting held yesterday, when representatives were present from our department stores, I presented a number of questions to them regarding use of parking meters, in which you stated you were interested.

Customer reaction, merchants' opinion and the opinion of the average motorist, are all very favorable. I believe this reflects any opinions which might be expressed by other merchants, as the majority of purchases in the downtown district are usually made in department stores. These men have reported that they do not receive any complaints from their customers, and they have stated on numerous occasions that the flow of traffic in the downtown sections has been speeded up noticeably since meters were installed.

The average motorist usually finds a parking space in the vicinity of the store at which he desires to transact business and does not voice any objections to paying his nickel for ample space in which to park his car.

THE RETAIL MERCHANTS' BOARD,
By GEORGE C. MORRISON, Secretary.

If you were a motorist in Toledo and knew you could drive downtown on business and park for an hour in a generous space near where you wanted to be,—wouldn't you like it? Our motorists do. I quote a letter from the Secretary of the Toledo Automobile Club, who originally opposed the system as a matter of principle:

Dear Mr. Robinette:

Regarding our telephone conversation of today, I will endeavor to give you the viewpoint of the members of this Club on parking meters. At first, as you know, we were against the parking meters because it looked as though it was just another grab on the motorist, and it was some time before I became convinced that the parking meters were of any benefit to traffic. Our members, most of them, have complimented the meters, owing to the fact that when they come downtown now it is easier for them to park.

The remarks that I hear also convince me that our members are fairly well satisfied because it's much easier to find a place to park. Not only that, but it eliminates a lot of double-parking and in general, in my opinion, speeds up traffic. This might be hard for one who fought the parking meters like I did; but I am really pleased with the success of them.

THE TOLEDO AUTOMOBILE CLUB,
By D. D. HATCHER, Secretary-Manager.

The Reasons

If you were a taxpayer in the community and you found that the *relatively few people* who at any one time could occupy the preferred parking spots on the downtown streets were contributing to the payment of *your* governmental costs the sum of $100,000 per year,—wouldn't you like it? Our citizens do.

Every element of Toledo's population—motorists, business men, citizens in general, administration and enforcement officers, and the newspapers—alike have found the plan meritorious. The complete equalization of rights and privileges for all, with no discrimination favoring special groups, has produced widespread approval. Our experiences with parking meters from the standpoints of the motorist and the business man definitely show that—"They like 'em."

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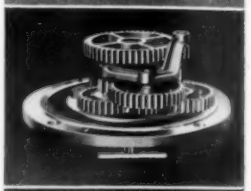

FEDERAL FROST-PROOF METER

Illustrated at the right is the Federal Frost-Proof Meter, with views of its leak-proof stuffing box, gear train (the heaviest in any meter) and accurate measuring chamber. This meter, which is of the positive displacement disc type, with breakable, rust-proof, copper-lined, cast iron frost bottom, is made in ⅝", ¾" and 1" sizes. The outer casing is of special high-grade bronze composition.

FEDERAL COMPOUND METER

Illustrated below is the Federal Compound Meter, for use in plants and similar services where the demand for water is highly variable. This meter consists of a current meter for measuring the large flows, a disc meter on a by-pass for the small flows, and an automatic valve mechanism for diverting the flow through one meter or the other according to its volume.

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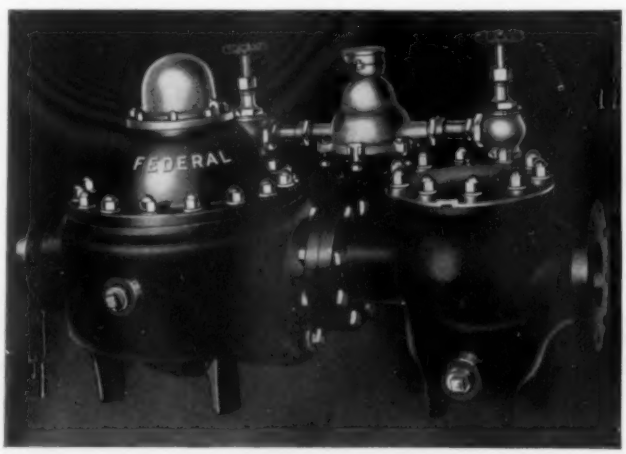

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Incinerators for Garbage and Refuse Disposal—Part II

By H. S. HERSEY
Vice-President and General Manager, C. O. Bartlett & Snow Co.,
Cleveland, Ohio

Furnace Design

Incinerator furnace design involves many problems resulting from high temperatures, and subject to rapid fluctuations which tend to spall refractories. There are also localized points, some of which are subject to thermal shock from the inrush of cold air, and others are subject to abrasion by materials passing into the furnace.

The refractories should be suited for the service and should be backed up by adequate insulators so that a minimum of heat is radiated from the outer walls. Perhaps a refractory lining 9 inches thick, backed up by more insulators than usually specified, might be better than 13½ inches of refractories and less insulators. It should be taken into account that incinerator furnaces are very heavy structures, and if the weight can be materially reduced, it is advisable to do so. Further, it would probably be found that while the added cost of insulators may be higher than for refractories, this added material expense is greatly offset because the insulators are not set with bonding material. In other words, the cost of laying insulators is very much less than that for laying the refractory materials.

In analyzing certain plants which have shown outstanding capacity with apparent minimum effort on the part of stokers, I am of the opinion that this is mainly accounted for by well-balanced proportioning of the furnace with relation to stoking operations, as well as by the type of construction employed for the furnace arch.

Comparing these plants with others designed on equal burning rates per unit of grate area, it appears that the limit of capacity may be dependent on the personal capacity of the man stoking, and that furnaces manually operated can be made too large. In other words, a stoker cannot increase his production above a certain point, no matter what grate area he may have available to work on. Certain furnace proportions are very pertinent in helping or hindering a stoker. Furnaces may be too deep, making it impossible to reach the back of the drying hearth. It is imperative that the operation of stoking be regularly and frequently done, and if furnace proportions are beyond the physical capacity of a stoker, he quickly tires, and the net result is less capacity.

It appears that the shape of the arch is an important factor in the production of high burning rates per unit of grate, as it will be most frequently found in furnaces employing the sprung arch type of construction, probably because of the benefit obtained from the radiated heat coming from this shape of arch. It therefore seems to me that this may be the preferable type of arch. It quite likely can be very closely approximated in results in a flat arch, by the employment of an inclined reflecting surface at the front of the furnace.

The prevailing practice in connection with grate design is that of using stationary and dumping grates, the latter being used for the discharge of the residue. The dumping grates in most plants would permit of easier cleaning of the fires if made larger than is usually specified; in fact, I should expect that if the dumping grate area was made equal to 50 per cent of the total grate area, it would result in better cleaning of the fires, with less time and effort. Dumping grates of this size might better be made in two pieces, or split in the center, each half to be operated separately, dumping toward the partition walls in the ash hoppers.

Present practice is to have the outside of the furnace encased in steel with the necessary buckstays and other reinforcing members. Stoking doors occasionally require to be raised, and there should be a cast iron plate located on the furnace front, in back of the door when in the raised position, so that the heat from the refractories of the stoking door will not warp this part of the structure. Careful consideration should be given to all details of construction related to the stoking and cleaning operations, such as the height of the dead plate, the stoking-opening in the door, also the size of the stoking door, etc., so as to suit conditions to the work the stoker is required to do.

Combustion Chambers

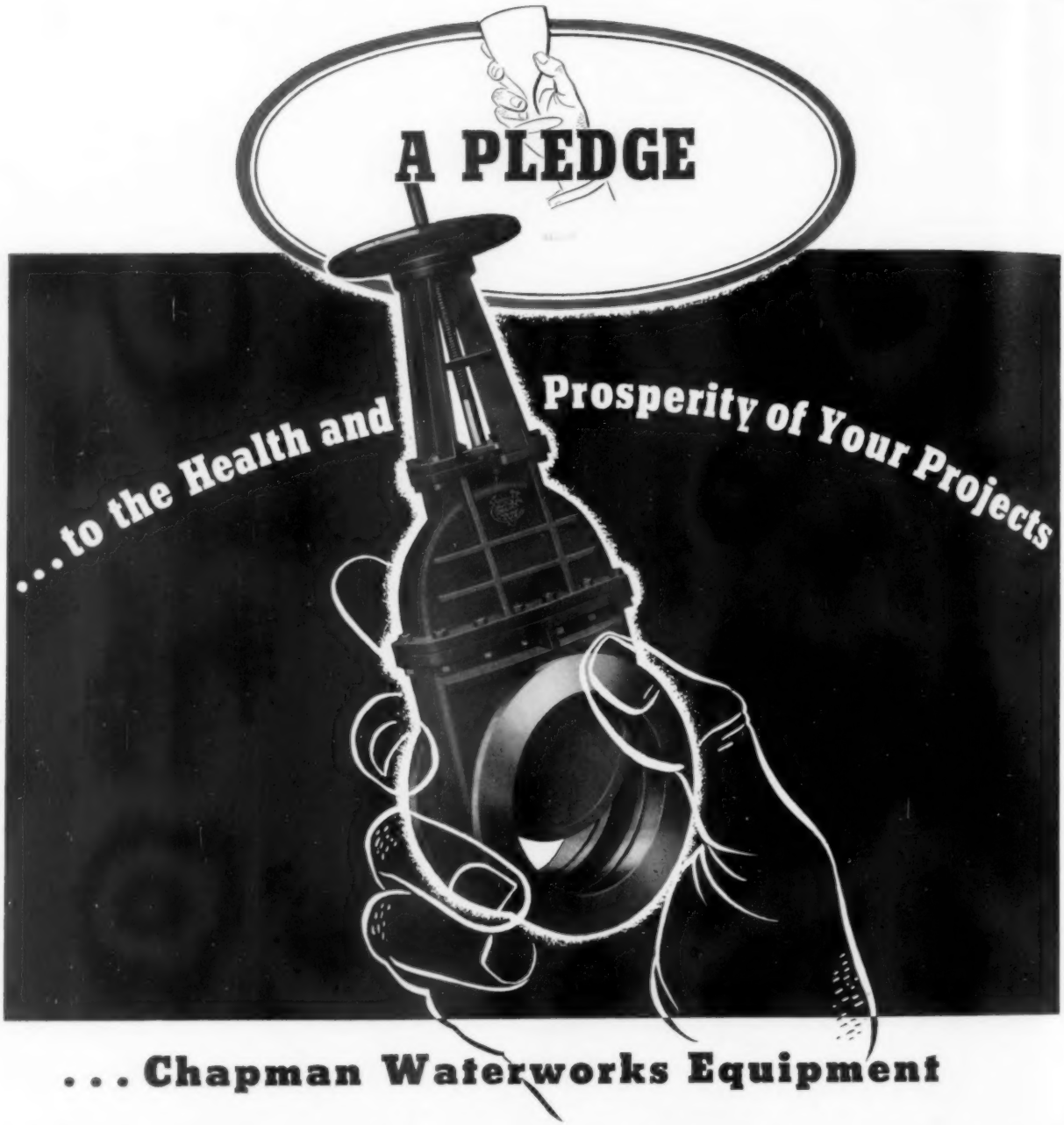
Combustion chambers are refractory-lined and are placed either back of or at the end of the furnace chambers. The purpose of a combustion chamber is twofold:

1. To provide a means of finally mixing available oxygen with the products of combustion as generated in the furnace chamber, thereby effecting complete combustion at high temperature.
2. To provide a space of ample volume and area so that the gas velocities will be lowered sufficiently to deposit fly ash, dust, and other solids.

Air Preheaters

In burning refuse, rapid ignition is of great importance to secure capacity and to maintain temperature; further, as a large amount of moisture is required to be evaporated, and the refuse is required to be heated to the point of ignition, preheated air is of unquestionable value. It is a well-known fact that oxygen in the air will unite more readily with carbon when either or both are preheated. In operation, combustible material is heated on the drying hearth by radiant heat from the furnace walls and arches and by radiation and convection from the fuel-bed itself, the air being heated by means of a preheater. Such por-

A PLEDGE



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tion of the gases from the combustion chamber as in the judgment of the operator is required are used for preheating to meet any condition within the furnace. The proper use of preheated air will make refuse combustible that otherwise would not burn without additional fuel. Furthermore, since preheated air is of larger volume per pound than air at room temperature, it follows that a given weight of preheated air is more advantageously distributed throughout the combustibles in the furnace, resulting in less total air required for combustion, which reflects in higher furnace temperatures.

The construction of preheaters varies according to the temperature of the flue gases required to pass through them. For example, in a plant not having waste-heat boilers, or where the products of combustion pass through the preheater prior to the boiler setting, the temperatures of the gases passing through the preheater are quite high, and the preheaters must be of a high-temperature type, preferably vertical tubular down-draft, with hot gases passing inside the tubes from top to bottom. On the other hand, if the preheater is set after a waste-heat boiler, any conventional type of preheater may be used. It is usual that the forced draft make at least two passes through the preheater on the outside of the tubes. Heat-exchange surfaces are encased in steel boxes in order to minimize or prevent leakage.

Expansion chambers are refractory-lined structures designed to reduce the final velocities of gases prior to passing to the chimneys so as to precipitate any dust, fly ash, or other solids that may have escaped the combustion chambers.

Chimneys and Dampers

Chimneys to serve incinerators are customarily built of an outer radial brick shell, with refractory lining throughout the entire height of the chimney column. The more general practice, in relation to such linings, is that they are independent of the column and completely self-supporting. Experience has developed a practice whereby the linings are corseted with steel straps, both belted and vertically disposed, and so arranged as to be interconnected, all for the purpose of insuring against failure.

Dampers are regularly furnished and installed to control the flow of gases in the main exit flue from the combustion chamber, the entrance flue to the preheater and the exit flue from the preheater (when preheaters are set ahead of boilers), and, occasionally, in the main flue connecting to the chimney.

Ash-Handling Equipment

In the smaller plants, ashes and clinkers are generally raked off the stationary grates onto the firing floor, and later shoveled into wheelbarrows and wasted outside the incinerator building. In the larger plants, ash and clinkers are passed through dumping grates within the furnace chamber directly into ash hoppers located directly underneath the grates, and the quenching of the ashes takes place within the hoppers.

Ash hoppers are usually accessible by means of ash basements which are large enough to permit trucks to be driven underneath the respective hoppers; or, if industrial cars are used, the contents of the hoppers are either taken by the cars to a remote point to be used as fill, or discharged into push-button-controlled ash-skip hoists or onto platform elevators, and by these means raised and discharged into ash bins or other receptacles, generally outside the building, whence the ashes are transported for final disposal at convenient intervals.

Furnace Auxiliaries

Auxiliary machinery generally includes, in the large-size plants, electric traveling cranes with grab-buckets, forced-draft fans, air compressors, and temperature and draft instruments.

Stoking and Cleaning Fires

Manual labor is employed for fire cleaning, although the labor attached to this task has been lessened in the more recently constructed larger plants by the installation of dumping grate sections within the furnace chamber. These dumping grates discharge ash and clinker to ash hoppers; but even with the apparatus provided, the labor of breaking clinkers on the grates and passing the residue through the dump opening is considerable. In the smaller plants, with stationary grates, the clinker is required to be broken by slice bars and is usually raked out by manual labor onto the firing floor or into ash-skips. The reason for the continuation of hand stoking is because of the uncertainty of the quality of the refuse handled, as it is never the same from season to season, or even from one charge to another, varying in heating value, moisture, ash content and mechanical condition.

Conclusions

1. Charging containers are primarily measuring devices and should be designed and operated accordingly. The volume of each container should not exceed one cubic yard in order to realize the best results in combustion.

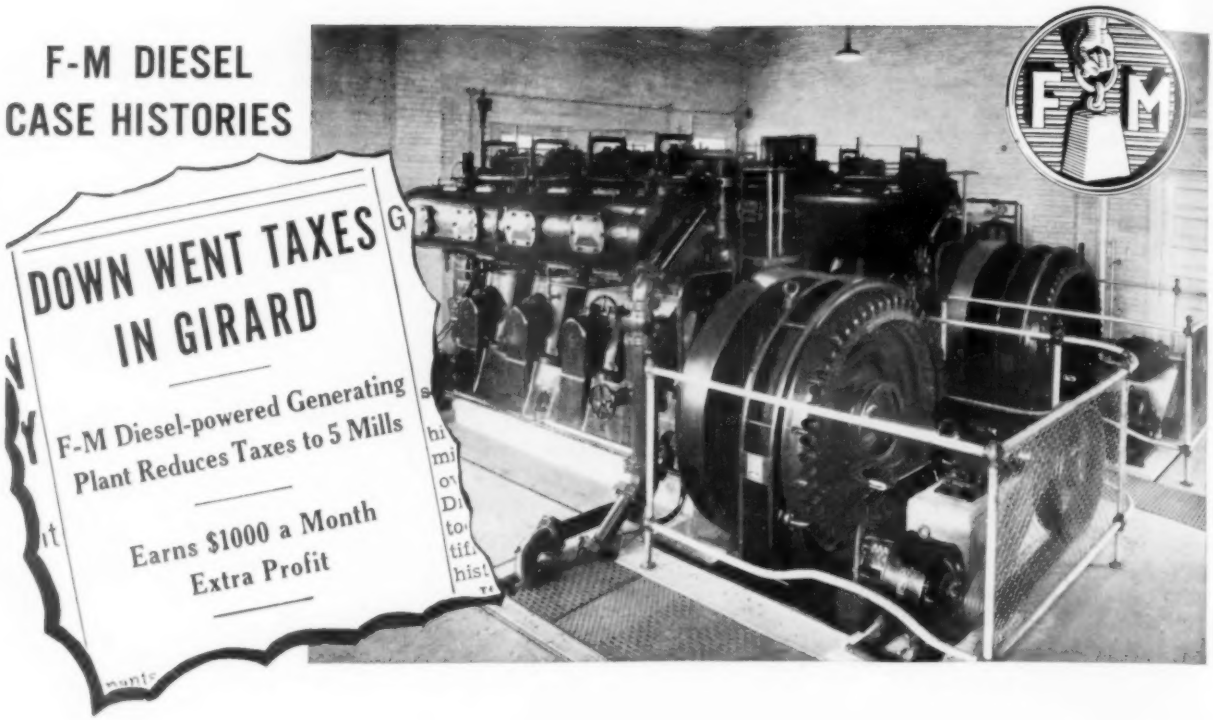
2. The advantages peculiar to the mutually assistant cell type of furnace chamber are that stoking and draft controls are individual for each cell, and therefore fires can be cleaned, one cell at a time, while the others are under normal operation; and in case fires in any one or more cells happen to be temporarily in bad condition, the general average burning rate and temperature of the furnace will be maintained close to normal by those other cells which have good fires.

3. Established practice today is to construct furnace chambers with volumes between 9 and 10 cubic feet per ton of furnace capacity per 24 hours. Normal burning rates are of the order of 70 to 85 pounds of mixed refuse per square foot of active burning grate area per hour, and it is possible to operate at rates of 100 pounds per square foot per hour for sustained periods. These rates refer to furnaces equipped with forced draft.

4. It is customary to establish certain plant-operating rules for the guidance of plant operators in regard to temperatures in the combustion chamber. These temperatures are quite generally set at 1250° F. as a minimum, 2000° F. as a maximum, and 1450° F. as average. Under these conditions, all products of combustion are completely oxidized and the gases discharged from the chimney are absolutely inoffensive.

5. Combustion-chamber volumes will range from 12 to 15 cubic feet per ton of 24-hour furnace capacity with

F-M DIESEL CASE HISTORIES



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cross-sections which limit the gas velocities to 15 feet per second.

6. Velocities in the main exit flues from combustion chambers are customarily between 25 and 30 feet per second.

7. Usual practice is to operate preheaters to produce preheated air from 300° F. to 400° F., and in order to accomplish this, the heat exchange surfaces will run from 7 to 8 square feet per ton of 24-hour furnace capacity, and the required heat exchange will be accomplished by passing approximately 40 per cent or less of the total products of combustion through the preheater when set without, or ahead of, waste heat boilers.

8. When expansion chambers are used, they are built with volumes ranging between 10 to 14 cubic feet per ton of 24-hour furnace capacity with cross-sections sufficient to limit gas velocities to 10 feet per second.

9. Chimneys are required to handle gases, in normal operation on mixed refuse plants, up to 1000° F. and on straight rubbish plants up to 1800° F., and must be built and lined to withstand these temperatures.

10. Such dampers as are in high-temperature locations require careful design to resist the temperatures. Current practice is to use high-temperature alloy castings for frames, with the damper face of refractory material. A steel mill type of water-cooled damper is also successfully used.

11. Grab-bucket cranes are commonly from 3½ to 5 tons capacity and handle buckets of 1½ to 2 cubic yards.

12. Forced-draft fans should be capable of delivering to the furnace not less than 5 pounds of air per pound of mixed refuse burned. This capacity should be based on the pressure conditions imposed by the duct work, preheater passages, air nozzles, grates, and maximum thickness of fuel on the grates. Total static pressures on forced-draft fans commonly range between 4 and 5 inches of water.

13. The mechanics of incineration today are less advanced than many other arts. We find that man-power is still required in the very heart of the system, namely stoking and cleaning fires. The primary reason for this, as pointed out before, is the uncertain quality of the refuse, varying even from one charge to another, in heating value, moisture, ash content, and, last but not least, mechanical condition.

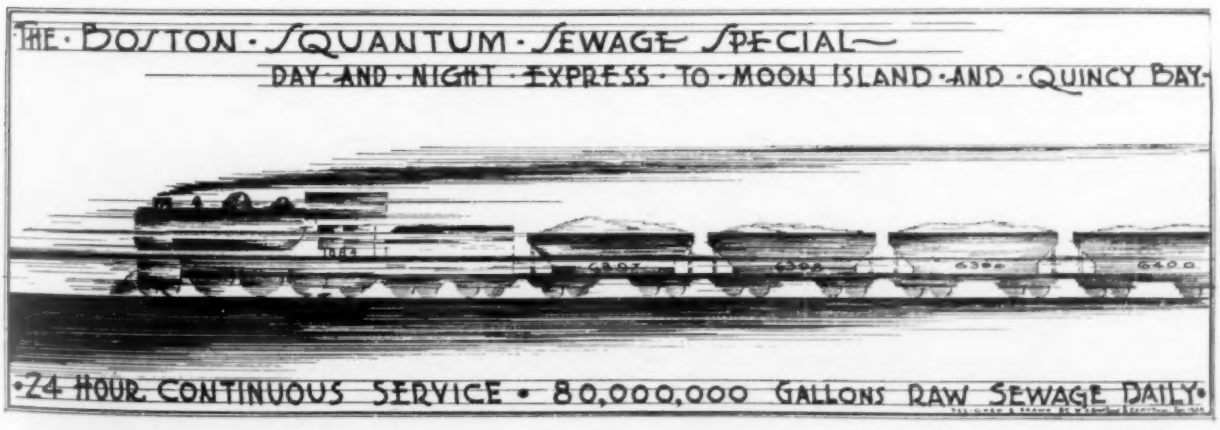
Nearly all the present-day developments in incinerator plant design have been brought about by the incinerator builders themselves, and new and untried things have been offered at the contractor's own hazard. Many times the contractor cannot offer new ideas, because municipal specifications are written requiring that only tried and proven devices be furnished. This, of course, is necessary to protect the public interest, but the combination of such circumstances naturally handicaps new development in any art.

Progress in the solution of incineration problems, and in the advancement of the art will continue to lag unless municipalities are given more latitude in the employment of untried schemes, or unless some incinerator builder, possessed of vision, will make the installation of such a plant free of cost to a city, incorporating therein, and demonstrating by use, the improvements so visualized.

Chamber of Commerce Fights Sewage in Quincy Bay

"THE discharge of sewage as pictured above occurs regularly every 24 hours. To move such a volume of sewage (80,000,000 gallons) would require 6,400 cars. Each car has a carrying capacity by weight and volume of 12,500 gallons. Dividing this number of cars into trains of 50 cars each, it would require 128 trains, and the total length of the trains would be 64 miles. If the cars were run through a tunnel in a continuous line the same as sewage flows, it would require 4½ cars per minute and one car-load of sewage (12,500 gallons) would be emptied into Quincy Bay from the Moon Island sewer outlet every 13½ seconds."

The above illustrative comparison was made by the Special Committee for the Elimination of Sewage from Quincy Bay and Adjacent Waters, of the Quincy [Mass.] Chamber of Commerce, under the chairmanship of former Mayor William A. Bradford, who has made a careful study of this situation. The Chamber of Commerce believes that the continued pollution of Quincy Bay will injure the health of thousands of people who use these waters for bathing purposes and will materially reduce property values. Consequently, the Committee has proposed a Bill, Senate No. 216, to the 1938 Legislature for the construction of suitable sewage-treatment and disposal works by the city of Boston in the immediate future. A hearing on the Bill was scheduled for March 1, 1938.


THE·BOSTON·SQUANTUM·SEWAGE SPECIAL—
DAY·AND·NIGHT·EXPRESS·TO·MOON ISLAND·AND·QUINCY BAY·
·24 HOUR CONTINUOUS SERVICE · 80,000,000 GALLONS RAW SEWAGE DAILY·

Spend

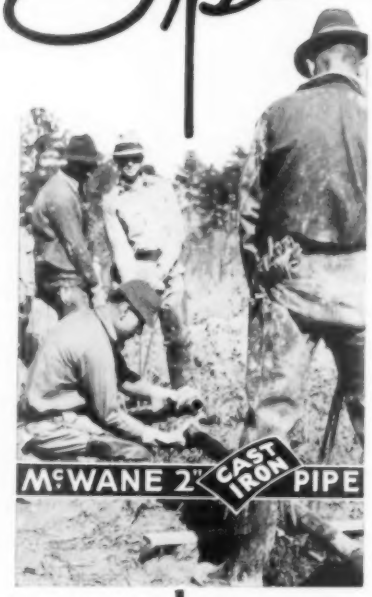
CORROSION RESISTING

get PERMANENCE

LASTS FOR CENTURIES

STOPS WATER LOSSES

ENDS REPLACEMENTS



That headline may sound sensational—especially to you men who have not kept abreast of changing conditions in the small-pipe field—but it is merely a statement based on sound facts.

Yes, there's no sound reason now for using short-lived substitute pipe in your small mains. The labor cost of laying it is as much, if not more, than McWane's *permanent, corrosion-resisting* 2" cast iron pipe.

Cast iron pipe costs *only a few pennies more per foot.* Thrifty, far sighted water works officials are investing those few pennies for this standard underground pipe that stops water losses—ends replacements—lasts for centuries. Investigate!

OVERSIZE MALE and FEMALE THREADED JOINT

is always the *intermediate* joint in the long 18-ft. laying lengths of McWane 2" pipe. *Oversize! Extra strong!* The only intermediate joint—as strong as the pipe itself—that does not reduce the internal diameter.

McWane
PRECALKED JOINT

Here's the simple, self tightening joint that serves 27 million feet of McWane 2" cast iron pipe from coast to coast. Easy to lay with unskilled labor. The precalked materials are already in the bell—just socket and calk. Precalked fittings can be inserted in the line at any place.

Sand Cast Inside and Outside

McWANE

CAST IRON PIPE COMPANY

BIRMINGHAM, ALA SIZES 1¼" THROUGH 12"

Chicago, Dallas, Denver, Kansas City, New York, Portland, Ore.
Salt Lake City San Francisco Los Angeles

50 Models

Elliott

$50 To $5000

ADDRESSING MACHINES

Because Elliott's popular priced machines *automatically* feed envelopes and other forms, they are six times faster than competing machines in their price classes.

Made in Cambridge, Mass. Sold everywhere. Look in your telephone book.

Forward Steps

Reported by
Municipal Officials, Chamber of Commerce Executives, and Others

Meeting the Citizens' Health Needs

BRUNSWICK, GA.—This city has recently inaugurated an extremely successful and satisfactory system for caring for the health needs of those citizens who are unable to pay for medical assistance. A clinic has been established where the city physician spends one hour or more of his time daily, receiving those patients who are able to get around. He is required also to respond to any emergency call from anyone in the city. He takes care of all emergency cases at the police station and all charity patients who have been placed in the city hospital. In order to protect the city from being imposed upon, all emergency cases are reported to the Relief Office as soon as the physician has attended to them, and that office makes a thorough check-up as to whether or not the patient is subject to charity assistance. Under this system, the unemployed are cared for as well as those on relief who are receiving insufficient wages to enable them to pay for medical assistance.

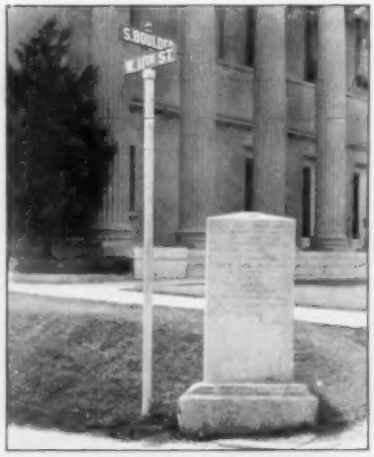
J. HUNTER HOPKINS,
Mayor.

Sane and Simple Street Naming and Marking

TULSA, OKLA.—Many a city is revising its haphazard street naming and numbering system in favor of one that will enable old-timers and strangers alike, once they have mastered the basic plan, to reach any desired number by the most direct route.

To those contemplating such a revision is recommended the street naming system of Tulsa, which for simplicity and lucidity is believed to take leading rank. The basic lines are Main Street, running north and south, and the Frisco tracks, running east and west. All the streets east of Main are named for cities of the United States situated east of the Mississippi (in other words, eastern cities), in alphabetical order—Boston, Cincinnati, Detroit, Elgin, etc.; while all those lying west of Main are named for western cities, also in alphabetical order, such as Boulder, Cheyenne, Denver, etc. All the streets south of the Frisco tracks are named numerically in sequence—First, Second, Third, etc.; while those north of the tracks are named after prominent Indians or pioneer citizens and arranged alphabetically—Archer, Brady, Cameron, and others. In all parts of the city the house numbers start with the even hundred at each corner.

One can see at a glance what a simple problem it is to reach any desired number from any other part of the city. Suppose, for example, one wishes to get to 615 Cincinnati. Everybody knows Main Street, which is one of the principal business streets of the city. Cincinnati is an eastern city, therefore he knows that Cincinnati Street is the second block east of Main. All the streets that are named numerically lie south of the Frisco tracks, therefore he knows that house number 615 is in the southern part of the city, between Sixth and Seventh Streets. All the house numbers on streets running north of the tracks have the prefix of the letter "N," thus making a clear distinction between 615 and N-615. The system is so simple that a child can easily master it, and it saves much time for residents and strangers within the gates.



Monument at site of first street marker, Tulsa; two methods of mounting markers

Where streets have been named, there must be some kind of sign to exhibit those names. Here again Tulsa has been active. The Junior Chamber of Commerce set up a street marker committee and decided to sponsor a movement for new street markers as one of its civic undertakings for the year 1936. The Chamber committee assisted the Street Commissioner and the City Engineer in the preliminary investigation and selection of the types of signs. On December 23, 1935, the first sign was erected, and in December, 1936, the project was completed. There are approximately 3,100 intersections in the city of Tulsa, and all of these have at least one sign and some two signs, diagonally across the intersection from each other. It is hoped that eventually there can be two signs on all the city's residential district intersections, and in some areas four signs to the intersection.

In the downtown area the new enamel signs are on brackets attached to the white way posts. In the residential districts the same size plates are used, but they are mounted on iron posts instead of being hung on brackets. When the street marking program was completed, the Junior Chamber of Commerce erected a stone monument at the site of the installation of the first marker in commemoration of this civic accomplishment.

M. C. SHIBLEY,
City Engineer.

Legislative and Administrative Accomplishments

SCHENECTADY, N. Y.—The Annual Report of this city which is soon to be printed will discuss in more detail the following outline of activities in the various departments of government during 1937:

Finance and Taxation

The tax rate was reduced $1.19 simultaneously with an increased provision in the budget for permanent improvements and the reduction of outstanding deficits. The bonded debt was reduced $610,263.83, and a cash deficit of $121,810.34 was transformed to a cash surplus of $64,949.86. Tax collections increased from 94.2 per cent to 95.1 per cent, the largest percentage collected by any large city in New York State.

BEFORE CLEANING

A Report from a City in Massachusetts—

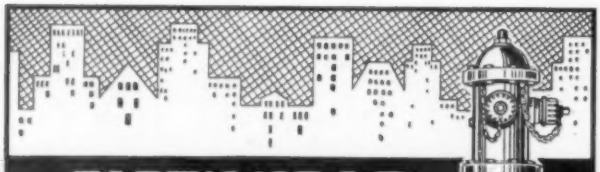
"During the past twenty years we have had cleaned approximately 184,000 feet of pipe varying in size from 6-inch to 36-inch, all Class B cast iron which has been underground since 1868 and 1882. At various times we have tapped said pipe and found no tuberculation on cut-out.

"The only figures on carrying capacity I am absolutely sure of are on our 5,000 feet of 36-inch pipe cleaned in 1928, after being in service forty-four years. Our recording gauges show that prior to the cleaning we were receiving 12,500,000 gallons per day, and after the cleaning, 16,000,000 gallons per day."

Write today for further information. You may find that your City, too, can obtain a similar increase in water flow from existing mains by having them cleaned by—

The National Water Main Cleaning Co.
Fifty Church Street New York

AFTER CLEANING



FIFTY YEAR RECORD of PERFORMANCE

The final test of any product is performance in actual operation. Kupferle fire hydrants, under all conditions, have been making good for more than a half century.

The Kupferle fire hydrant line is complete—two distinct types and all sizes—there is a Kupferle hydrant to meet your requirements.

Kupferle fire hydrant specification sheets sent on request.

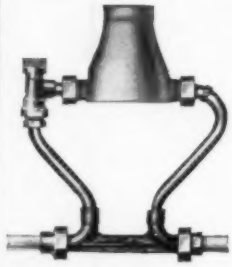
—•—

JOHN C. KUPFERLE FOUNDRY CO.
ST. LOUIS MO.

KUPFERLE FIRE HYDRANTS

Coppersetters WITH *and* WITHOUT VALVES

FORD VALVE COPPERSETTERS provide an inverted ground-key valve right at the most convenient point, the meter inlet.



COPPERSETTERS, both plain and valve type, are made for raising the meter from 6" to 36" above the level of the service line. Write for more information in our complete catalog.

WATER METER QUALITY EQUIPMENT

FORD METER BOX CO.
SETTING *and* TESTING EQUIPMENT *for* WATER METERS
WABASH, IND., U.S.A.

A Finance Department was established, including the Bureau of Treasury and Accounts, Purchasing, Assessment, and the financial operation of the Water Department. The new department began the issuance of guaranteed tax searches, and established a mailing list for tax and special assessment bills with follow-up procedures for unpaid assessments. A requisition and purchase order procedure was established enabling the Finance Department to determine whether funds are available for items before they are bought, and the purchasing procedure was improved and lower prices secured through the use of a revolving fund for certain items.

Welfare Activities

Municipal welfare activities were consolidated, with a consequent reduction of approximately $27,000 in annual administrative expense. The clinic work of the Health Department was expanded, a milk ordinance was adopted, and a meat and food ordinance was prepared by the Health Department.

Fire Protection

The Fire Department was reorganized, resulting in a 10 per cent increase in the effective fire-fighting force. Fire losses were the lowest in 16 years. An intensive training and fire prevention program was instituted, and a contract was let for construction of a drill tower. Construction of a new fire station was started.

Police and Traffic

The installation of two-way radio for police work, authorized in 1936, was completed, and three precinct stations were abandoned. A triplicate traffic ticket system was inaugurated, with audit by the Finance Department, and traffic conditions improved as a result.

Pensions

Police and fire pension funds were strengthened by local laws.

Engineering and Public Works

The departments of Engineering and Public Works were consolidated and reorganized, resulting in improved operating control and reduced administrative cost. The widening of Jay Street and Brandywine Avenue was completed, and Albany Street was widened from Crescent Park to Craig Street. Over three miles of streets were improved and more than a half-mile of sewers was built with WPA help.

Parks and Recreation

A Department of Parks and Recreation was established. Second Ward Park was completed and opened, and ten hard-surface tennis courts were built in Central Park.

Water

The Water Bureau was established as a separate department, and the cost of water-main installation was reduced 50 per cent.

C. A. HARRELL,
City Manager.

New Public Buildings at Nashua

NASHUA, N. H.—The city of Nashua built a new High School in 1919. It was a fine building, and we were proud to send our 450 pupils of high-school age to it. But by 1935 the building was straining to accommodate some 1,500 boys and girls. By means of a two-session day it was possible to crowd them in, but it was obvious that such conditions could not continue.

That year it was decided to build a new High School at a cost of $600,000, 45 per cent of which was a PWA grant. In the fall of 1937 the building was opened to our students.

Besides the classrooms, the school is equipped with a modern theater in one wing. This is the auditorium, and is superior in every way to the old public "hall." The dramatic activities of the students can be properly presented, and their interest in this form of art stimulated, as well as giving us a "city theater" for civic uses. An up-to-date gymnasium occupies a wing at the opposite end of the building.

In the main part of the structure is a well-equipped library. The domestic arts department is a place where the prospective housewife can learn the uses of the most modern household appliances. The laboratories and science rooms are in keeping with the rest of the building.

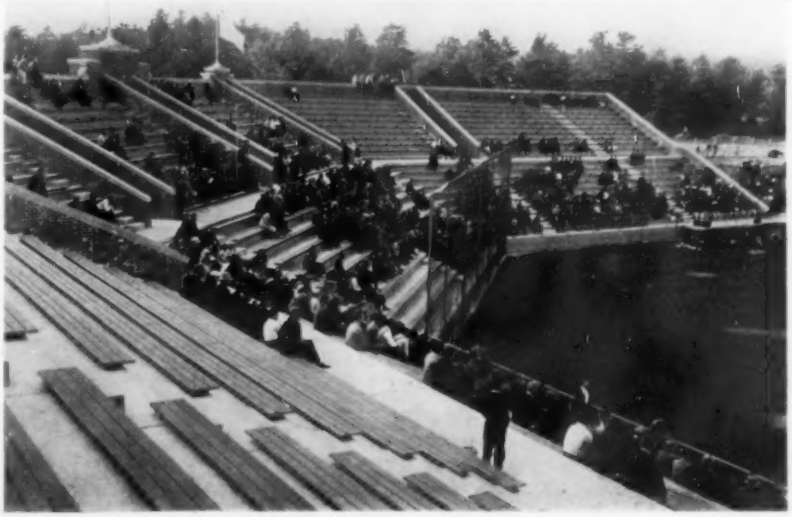
There is a cafeteria in the basement in charge of a trained dietitian, where pupils can secure at cost a well-planned lunch.

Another city building project, completed within the past two years, is the Holman Memorial Stadium and athletic field. Under the provisions of the will of a former citizen, Charles F. Holman, the city received over $53,000 for the purpose of erecting a stadium. The construction was done with WPA funds, amounting to a little over $100,000.

The Stadium itself is a steel-and-concrete building with outside walls of brick. Its seating capacity is approximately 3,000. Through the generosity of the Knights of Columbus we were able to add bleachers for about 1,200 more people to the original stadium.

The project includes a splendid athletic field in addition to the buildings. There

NEW HIGH SCHOOL, NASHUA; THEATER AT LEFT; GYMNASIUM AT RIGHT



INTERIOR OF HOLMAN STADIUM, NASHUA

ANOTHER CONTRIBUTION TO PROGRESS!!

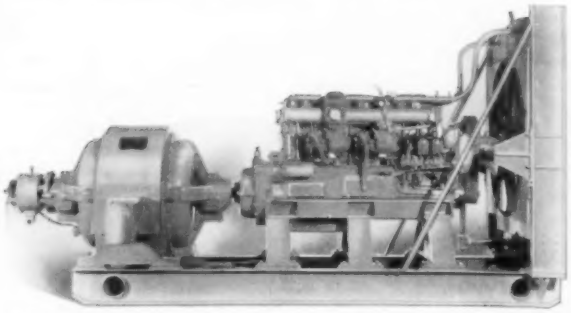
High-powered portable emergency generator set.

Sterling High Duty

Sterling — The Engine of Refinement

Internal Combustion Engines

GAS—GASOLINE—OIL ENGINES



150 Kilowatt, 1800 R.P.M Emergency Generator Set. Sterling Dolphin 6-cylinder, 240 Hp. engine, direct connected to General Electric Generator, for portable emergency work. Built for Philadelphia Electric Company. Weight—11,160 pounds, as illustrated. Close governor regulation.

Built on an unweaving foundation, for mounting on a truck. Can be used also for stationary work. Utilities, telephone, and electric companies, can now provide continuity of service at the least possible cost.

STERLING ENGINE COMPANY

Home Office and Plant
1270 Niagara St., BUFFALO, N. Y.

Dept. C-11

Branch Office
900 Chrysler Bldg., NEW YORK, N. Y.

CONVENIENT WATER REGISTRATION

These SPARLING Indicator-Totalizer-Recorders in the reservoir office at Long Beach, Calif., electrically connected to two 30-inch SPARLING Main-line Meters 200 feet distant, indicate and record the rate of flow from the storage tanks, and show the total amount drawn.

Long Beach has forty-nine SPARLING Main-line Meters in service.

The type of equipment shown can be used to register the flow through meters several miles away.

SPARLING Meters are made in sizes from two-inch to sixty-inch—and larger—to meet any main-line metering requirement.

Bulletin 304 will be sent gladly at your request.

R. W. SPARLING

WATER MEASURING EQUIPMENT

Los Angeles—945-951 N. Main St. Chicago—3104 S. Michigan Ave.
Cincinnati—622 Broadway New York—101 Park Ave.

NATIONAL METERS

EMPIRE · NASH · CROWN · GEM
EMPIRE-COMPOUND · PREMIER

If you are interested in securing maximum water revenue with the lowest cost for meter repairs or replacements, then investigate the complete line of National Meters.

NATIONAL Meter COMPANY

4201 FIRST AVENUE
BROOKLYN, N. Y.

BOSTON · CHICAGO · DALLAS
LOS ANGELES · SAN FRANCISCO

Why not remember to mention THE AMERICAN CITY?

wire fence and a hedge of pine trees.

The High School and the Holman Stadium were built during the administration of Mayor Alvin A. Lucier, 1934-1938.

FRANK A. MACMASTER,
Mayor.

Land Subdivision Control

DARIEN AND WESTPORT, CONN.—The 1937 Legislature of the state of Connecticut passed "An Act Providing for the Regulation of the Subdivision of Land," sponsored by the Fairfield County Planning Association. Subsequently the Planning Commissions of Darien and Westport, both towns of between 7,000 and 9,000 population, took favorable action, adopting regulations, town meetings having previously passed the necessary ordinances. New Canaan and Fairfield are preparing their regulations and are expected to pass on them some time this year. The enabling act is composed of five sections. The first provides that any town, city or borough having a planning commission may pass an ordinance requiring that all plans for subdivision of land must be approved by the commission. Secondly, the planning commission shall adopt regulations governing the subdivision of land. The third section relates to procedure and states that the commission must approve or disapprove a plan within 30 days or it shall automatically be considered approved. Penalties for the transfer or sale of land by use of a plan of a subdivision which has not been approved are given in section 4, including a $25 to $100 fine and possible injunction or civil action of some sort. Section 5 contains three broad definitions, of street, subdivision, and municipality.

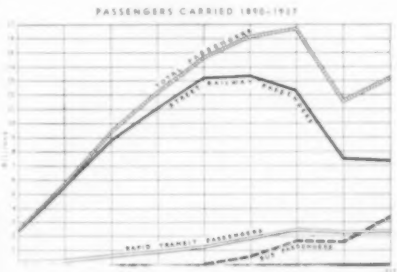
Darien and Westport, the two towns which have adopted this Act, have set up fairly detailed regulations under Section 2 as instructed. Both of their planning commissions require submission of a map of the proposed subdivision. Darien provides minute instructions for the form and content of this map, insisting on the inclusion of such elements as radii of all curves, locations of monuments, profiles along center lines of streets showing existing and proposed elevations; stating size and scale of maps; and requiring a statement signed by a licensed land surveyor that the map is substantially correct. Regulations for streets are given in considerable detail by both towns, and a comparison shows some slight differences. In Darien the minimum street width given is 50 feet, with corners rounded by curves of at least 30 feet radius. In Westport, the corresponding figures are 40 and 20. Both cities discourage dead-end streets, but where they are necessary, insist upon a good-sized circular driveway. Westport sets a maximum street grade of 10 per cent, Darien a minimum of 0.5 per cent and in general a maximum of 7 per cent except in residential zones, where 12 per cent may be allowed. In Darien, "street lines within a block which deflect from each other by an angle of more than 10 degrees shall be joined by concentric curves." Westport provided fairly detailed instructions for the grading, surfacing and draining of streets before acceptance of a plan, and although the Darien regulations are more conservative in this respect at present, an amendment is now being proposed to provide for "proper" grading, surfacing and improving, as well as draining, which is in the present regulations, and perhaps to include some regulations on the nature of the improvements.

Both towns have regulated lot depths and widths in accordance with their existing zoning laws. In Darien the minimum is 40 by 100 feet in the "B" zone, 50 by 100 in the "A" zone, and 70 by 100 in the "AA" zone. In Westport's "A" zone the minimum width is 75 feet and the minimum area 11,000 square feet, and in the "B" zone the minimum size is 60 by 100 feet. In the Westport regulations there appears a definition of the property line, which is not included in the Darien regulations. In "A" zones no building shall be located nearer to the front property line than 35 feet, and in the "B" zones, 20 feet. A particularly interesting paragraph in the Darien regulations relates to parks and open spaces. "It is recommended that at least 5 per cent of the area, exclusive of streets, be reserved or dedicated for park or playground space in all developments over 10 acres in area, with due regard being shown for the preservation of all natural features which add value to the community, such as large trees or groves, watercourses, beaches, scenic points, historic spots and similar assets." This quoted paragraph was adopted from subdivision rules of Islip, Long Island, of 1932. Finally, the Darien ordinance states that its regulations apply to the amendments or re-developments of any previously subdivided property as well as to new subdivisions.

CHARLES BATES DANA,
Town Plan and Zoning Commission, Darien.

JESSE UNDERWOOD,
Town Plan Commission, Westport.

Transit Business Increasing



To the Editor of THE AMERICAN CITY:

The fourth paragraph of the article, "Fitting Transit to the American City," by Harland Bartholomew, city planner, of St. Louis, in the January issue of THE AMERICAN CITY is misleading if the statistics which were published in the January issue of *Transit Journal* are any criterion. Mr. Bartholomew's statement that the number of revenue passengers carried by transit companies has been decreasing during the last decade is true so far as the first half of this period is concerned. But, contrary to his "particularly toward the close of this period," the number of revenue passengers—and revenue, too—has been on the increase during the past five years, as indicated by the chart above.

KENT S. PUTNAM,
Assistant Editor, *Transit Journal*, New York.

New City Managers

Chester F. Lewis, consulting engineer, of Raleigh, N. C., has been appointed City Manager of Morganton, N. C.

A. W. Johns, former City Manager of Ambridge, Pa., has been appointed Manager of Mt. Lebanon Township, Pa., to succeed F. W. Cooke.

Alvin H. Hinson has replaced G. H. Bates as City Manager of Plant City, Fla.

CLARENCE E. RIDLEY,
Director, International City Managers' Association.

Joseph T. Woodruff's Concluding Advice

IN his last major public address prior to his untimely death in January, Joseph T. Woodruff, as Counsel for the New England Regional Planning Commission, discussed "Planning for Better Community Development" at a state-wide conference held in Concord, N. H., under the auspices of the State Planning and Development Commission of New Hampshire. His many friends may regard these concluding paragraphs from that talk as his final message in behalf of the cause to which he had devoted for many years his outstanding ability:

"What are the three steps in planning for community development? Briefly, they are the answers to these three questions: (1) What are the facts about our town? (2) What do we want our town to be? (3) How can we reasonably achieve these ends?

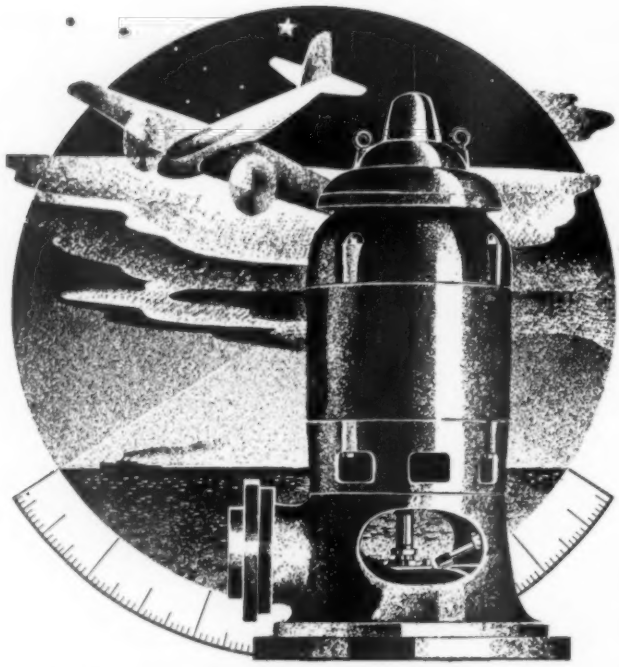
"These are questions to be answered by our planning bodies in each and every progressive community. When the facts have been gathered and presented on maps and in records, our people cooperating with our planning bodies can determine and set down on paper those things that are to be desired in order to make their community the kind of place that they and their children will want to live in and prosper.

"With this plan as a constant goal of achievement, tested by the common sense of local knowledge and often with the aid of experienced advisors in the planning field, the town can gradually achieve its hopes for the future in the normal course of events.

"No town is too small to plan its future. Most towns which start to plan say that their only regret is that they did not start long ago.

"In the good old days, when the population of the country grew apace, a certain amount of prosperity came to all, no matter what they did. In recent years, when population growth has definitely slowed down, things are different.

"Today, those towns and cities that plan for their future while protecting what they have are those towns and cities that will attract the kind of visitor and resident who adds to the prosperity of the community and insures its continued well-being."



GUESSWORK IS EXPENSIVE

Guesswork makes an easy start but a hard finish. The slight additional difficulty of making accuracy dead certain from the beginning—and always—is manifoldly repaid in the satisfaction of correct results.

The Pomona policy of constantly insisting on the use of the best methods and materials, with precision workmanship, has been abundantly protective and profitable to owners of Pomona Pumps. It has built a substantial organization with every facility for continual accuracy. It has made the name "Pomona" a guaranty of economy and satisfaction to users of Pomona Pumps.

What more effective insurance can the purchaser of a Pomona Pump desire than the certainty of accuracy in the product and the backing of a long established organization of international scope?

POMONA PUMP CO.

Manufacturing Plants: Pomona, California - St. Louis, Missouri
Branch Offices: New York, Chicago, Los Angeles, San Francisco

Oceans of Water

POMONA TURBINE PUMPS

The Standard
for more than
50 Years

Automatic Pressure Control Valves
•
Feed Water Filters
•
Hydraulic Engines
•
Portable Fire Hydrants
•
Hydraulic Booster Pumps

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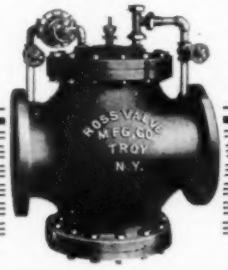

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Traffic Control and Facilitation

Conducted by Publications Committee, Institute of Traffic Engineers, 1 Park Ave., New York

Paul L. Green, Chairman; George W. Barton, Kenneth W. Mackall, Miller McClintock, Robert A. Mitchell, William R. McConochie, Arnold H. Vey, Joseph L. Wehmeyer, William A. Van Duzer, Thomas J. Seburn, Roger L. Morrison, Otto K. Jelinek, William C. Brandes

Davenport Seeks Advice for Saving Pedestrians' Lives and Tempers

By WILLIAM R. McCONOCHIE
Traffic Engineer, Chicago Surface Lines

"PEDESTRIANS are frequently left stranded in the middle of the street with the traffic lights against them," wrote J. U. Nichols, Secretary of the Chamber of Commerce of Davenport, Iowa, to the Institute of Traffic Engineers. "What can we do about it?"

Selected members of the Institute volunteered to cooperate in this friendly gesture toward a city which does not yet have a traffic engineer of its own.

A Typical Downtown Shopping Center

The central business district of Davenport is typical of most Middle-Western cities. Streets are all 56 feet between curbs; blocks rectangular and 376 feet between center lines of streets; traffic signals timed in the alternate progressive manner on a 38-second cycle, providing progressive speed of 15 miles per hour. Street cars operate on most east-and-west streets; buses on several north-and-south arteries in this central area. Surrounding towns and rich farming districts contribute a heavy volume of motorized shoppers to this city of 65,000 people.

More Time and Signals, Says Philadelphia

Robert Mitchell, Traffic Engineer of Philadelphia, says: "First, the signal cycle is not long enough; and, second, there are not sufficient signal lanterns.

"It takes a pedestrian 14 seconds to cross a 56-foot street. With 19 seconds (half the present cycle) allotted to each street, only the people who step from the curb in the first 5 seconds (necessarily a small number) can get entirely across the roadway before the opposing vehicles begin to move. No wonder the majority of pedestrians get caught in the middle of the street.

"The present intersection set-up is one far-side signal lantern for each of the four directions of vehicular traffic. This is not enough. Four crossings are made by pedestrians without a signal in front of them. If we hope ever to educate pedestrians to obey traffic signals, we must first place signal faces where they cannot avoid seeing them."

Mr. Mitchell suggests that Davenport try a double-alternate timing of signals on an 80-second cycle. "This is only about half as efficient in moving traffic, naturally, but it does allow the use of a WALK lens and gives time for pedestrian crossing. Also, it will allow more time per cycle for turning vehicles; which seem to be quite numerous.

"Four additional signal lanterns should be erected at each intersection, with additional WALK lenses placed on each signal lantern."

Visibility and Markings, Says Milwaukee

Approaching the problem from a different angle, Martin Bruening, Traffic Control Engineer of Milwaukee, says: "Pedestrians suddenly seem to step out from nowhere, when as a matter of fact some unnecessary pole or other object has hidden them. Hence, improve daytime visibility by reducing the number of utility poles, mail boxes, "car-stop" and parking-sign standards. Our practice is to have a minimum number of objects along the curb near intersections. At night, in addition to this, more visibility by providing a high degree of illumination."

Mr. Bruening strongly recommends the use of traffic lines, particularly "hook-type" stop lines to restrain motorists from running into cross-walk zones during STOP periods. "The confidence of pedestrians is increased by their use."

In recommending that Davenport consider the generous use of pedestrian islands, he says: "At signalized intersections, traffic islands are invaluable because they afford pedestrians refuge when signal indications change. Along street-car lines, these would be raised loading zones; where there are no street-car lines, center-of-street islands would be used. Street-car-type islands not only afford protection to pedestrians, but also permit traffic to continue even though street cars may be loading or unloading."

In behalf of Davenport's short traffic-signal cycle, Mr. Bruening says: "The

TYPICAL DOWNTOWN DAVENPORT STREET INTERSECTION, SHOWING TRAFFIC LIGHTS ON THE FOUR CORNERS

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majority of our signals are operating on either 40- or 44-second cycles. Such cycles used in combination with traffic islands render a very high degree of pedestrian safety and control. With the short cycle, pedestrians seldom cross against the signal, because they know the wait will not be long.

"WALK signals give pedestrians an honest clearance interval. Coming on with the green signal, they disappear sufficiently in advance of the end of the green to enable all pedestrians to reach the curbs or center islands before the signals change. To date, the walk-signal installations in Milwaukee have had favorable accident records."

More Advice

As a further contribution toward the solution of Davenport's pedestrian problem, the author stopped in that city after attending the Kansas City convention of the Institute. At a recent luncheon attended by city officials and business men I gave an illustrated talk on "Channelization of Intersections—A Plan for Davenport." Specific designs and locations of pedestrian islands were discussed.

The Davenport Chamber of Commerce is now analyzing the material submitted by members of the Institute of Traffic Engineers. A report based largely on these data will be submitted to the proper city officials.

Members E. B. Lefferts and A. J. Naquin have been engaged in a similar good-will endeavor for the city of Kenosha, Wis. Their findings will be reported in an early issue of THE AMERICAN CITY. Has *your* city a traffic problem? Perhaps we can help you solve it.

Heavy Safety Offensive Reduces Injuries 35% in Providence

By RALPH W. EATON
Traffic Engineer, Providence, R. I.

During the four years prior to 1937, *the motor-vehicle fatality rate in Providence was, in each of these years, lower than in any other American city of over* 250,000 *population. During* 1937 *this leadership was lost. Many people have asked what Providence is going to do about it. A partial answer may be found in the following statement.*

DURING the month of November, 1937, the Bureau of Police and Fire of the city of Providence approved plans for a six-months intensive traffic safety campaign, to begin December 1, under the slogan "Not over 20 to 25 miles in the city." Great numbers of courtesy cards were prepared, to be handed to motorists when for any reason police officers should stop their cars. These courtesy cards explained the plan very briefly, and asked the cooperation of the motorist, and 15,580 were distributed in December. Leaflets were distributed to 60,133 residences, and 18,500 given to students. A letter was sent to civic and other clubs, and to all churches, asking cooperation. The total effort was:

Newspaper Publicity.—48 news items, 9 editorials, 2 cartoons, 17 photographs, 5 letters-to-the-editor, all totaling 1,181 inches of publicity.

Other Activities.—171 safety talks, attended by 32,470 students, in schools of all grades; 15 safety talks, attended by 3,500 persons, given before clubs and societies; 4,204 persons reported to Motor Vehicle Division for driving too fast; 4,064 stopped and warned for driving too fast, and 8,200 for other improper driving practices; 1,215 operators summoned to precinct stations for instruction in safe driving; 18,036 occasions where dangerous intersections were covered by officers during rush-hours, in addition to those covered regularly.

The response by the public was so definite as to be obvious to almost everyone. It was the subject of general conversation. Many people who at first had been inclined to question the attempt to hold down speed in certain places began to realize that no noticeable loss of time results, and that driving is far more comfortable and pleasant.

A reduction in accidents was to be expected, and it was a big one, affecting every kind of injury—pedestrian children, pedestrian adults, and riders. In amount it exceeds the expectations of all of us. If we compare this December with the average December figures for 1933, 1934, and 1935 (our "championship years" when we won the award of the National Safety Council for Group II cities), we find a definite reduction in the number of injury-accidents and consequently in injuries, as follows:

Pedestrian children injured—28 per cent
Pedestrian adults—reduced 19 per cent
Total pedestrians—reduced nearly 24 per cent
Riders injured—reduced 48 per cent
Total persons injured—reduced more than 35 per cent

Nor were these fine results accompanied by a large increase in the number of arrests—that increase was small. We believe the principal cause was the wholehearted cooperation of the average automobile operator. Opinions may differ as to whether this was caused by fear of arrest, but the writer does not believe it was.

If the remarkable results were caused by more careful driving and better obedience, this attitude should show up in the monthly checks made by the Traffic Engineer on speeds and STOP sign obedience. December showed only 3-4/10 per cent violations against STOP signs as compared with a previous 4-year average in December of 6-9/10 per cent. Thus we reduced the violators by a little over one-half, and set up a record we have never before approached. Actually, in December more than 89 per cent of our people came to a full stop at a STOP sign, while 7-7/10 per cent came to so slow a speed that they were practically stopped.

Now compare last December's results in the matter of speed with the average December in the previous three years:

The average speed (as indicated by these sampling methods) in December was only 3-1/3 per cent below the previous average for the month. The really important thing is that the higher speed groups were radically reduced. The number whose speeds were over 35 miles per hour was only about one-sixteenth of the average for the three previous Decembers, and the number at speeds between 30 and 35 was only about one-fourth. Even the number at speeds between 25 and 30 miles was only about two-thirds. The result was that our traffic moved at a very uniform, quiet and orderly speed.

WHAT CAUSES ACCIDENTS IN PITTSBURGH

THE car?—97 per cent of accident vehicles were reported in good repair.

The road?—In only two accidents in 5,000 was a road defect or unlighted obstruction reported.

The weather?—The weather was clear and the pavement dry in 70 per cent of accidents.

John Barleycorn?—Bad as he is, he was reported as keeping company with but 5 per cent of drivers and 8.3 per cent of pedestrians.

Young drivers?—Drivers under 20 years were involved in but 8 per cent of all accidents and 7 per cent of all deaths. Drivers over 50 were involved in an equal per cent. Drivers between 20 and 29 were the worst, involved in 42 per cent of accidents and 46 per cent of deaths.

Women drivers?—Although data are not available as to comparative registrations or hours at the wheel, women drivers may take satisfaction in the fact of being involved as drivers in but 1.6 per cent of fatal accidents, 4.7 per cent of injury accidents, and 4.4 per cent of property-damage-only accidents.

WHO, THEN, CAN BE BLAMED?—Mr. Ordinary Citizen—John Jones and Mary Smith, adult drivers who should know better, but who fail to realize the necessity of care or don't know better; who risk a life to save a minute; who believe "courtesy" is an obsolete word.

DONALD M. MCNEIL,
Traffic Engineer, Department of Public Safety, Pittsburgh, Pa.

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Cities Seek to Solve Their Excess Real Estate Problems

TAX foreclosures and obsolete public buildings find scores of cities in the United States and Canada holding too much real estate for financial comfort, reports the Municipal Finance Officers' Association.

Vero Beach, Fla., seeking a way to capitalize on land holdings brought by the passing "boom," offered several hundred town lots for sale at a low price, provided houses were built on them within one year. Payment could be made in Vero Beach bonds, which were selling low. The procedure canceled $30,000 in bonds, put 75 lots on the tax roll, and caused $70,000 to be invested in new homes.

In Middleboro, Ky., to avoid loading the city with tax-delinquent real estate, it is proposed that lagging taxes be collected through business concerns. Each employer would seek to arrange with individual employees who have past due taxes to permit deductions from their pay to meet the obligations.

"Seven Deadly Sins" of Municipal Reporting Listed

PUBLIC officials who seek to inform the citizen on what is going on in his community and to interpret his tax bill can take hints on how not to do it from the "seven deadly sins" of municipal reporting listed by Clarence E. Ridley, Executive Director, International City Managers' Association. These "sins" were drawn up by Mr. Ridley, following an analysis of annual municipal reports of 1937:

1. *Silence.*—Eighty annual reports were issued in 1937 as compared with 74 in 1930, but they represented only about 5 per cent of the cities of over 10,000 population.

2. *Uninterpreted Statistics.*—The average citizen is not an adding machine. An uninterpreted statistic is to him the most indigestible and unnutritious of morsels.

3. *Poorly Interpreted Statistics.*—The reporting official has a moral responsibility never to put a false interpretation on a statistic, either intentionally, through ignorance, or through carelessness. A graph whose scale does not start at zero, for example, exaggerates trends. Per capita costs are never a measure of efficiency.

4. *Irrelevant Statistics.*—The average citizen is interested in what his city is accomplishing and what it costs. Number of fingerprints taken, feet of hose laid and location of trees sprayed are not measures of accomplishment.

5. *Poor Make-up.*—A report to be effective must be read. A report to be read must be attractive. A report to be attractive must be printed in easily read type, must be well arranged, and must be copiously illustrated with pictures and charts.

6. *For C.P.A.'s Only.*—The intricacies of accounting must forever remain a mystery to the average citizen. It is all right if the city wishes to publish a complete document on municipal finance for bond houses; but the words "annual report" should be omitted from the title page.

7. *The Collector's Instinct.*—If the official avoids all these pitfalls he still may not have a municipal report. A municipal report is not a mere collection of departmental reports whether arranged alphabetically or in any other fashion. It is an organized and integrated picture of municipal affairs. Facts are included because they are significant parts of the picture; other facts are omitted because they would only clutter and confuse it.

No single one of the 1937 reports was guilty of all these faults, according to Mr. Ridley. But there were few that did not have one or more of them. Brevity and apt illustration characterized the more attractive reports, and several cities attempted to help the citizen understand how his tax dollar was spent, by pamphlets graphically explaining the numerous services the citizen receives from his government, and his contacts with it.

Crime Among Youth Found to Rise When Relief Measures Lag

DEFINITE relationship between inadequate relief funds and the increase of major crimes among youth was seen today by Fred K. Hoehler, Executive Director of the American Public Welfare Association.

As city and state governments again face relief crises, Director Hoehler pointed to an upward trend in juvenile delinquency during the depression. Taking the juvenile delinquency record of one "typical" city as an example, Mr. Hoehler reported a general increase of 22.5 per cent from 1930 through 1936.

The delinquency rate based on the number of delinquents from 5 to 17 years of age per 100 population rose from 1.42 to 1.69 during those years. Despite generally improved economic conditions, the number increased to 2.00 in 1937. During the administration of Federal Emergency Relief in 1932-33, however, the number decreased.

Juvenile delinquency records for the country as a whole followed the same trend, Mr. Hoehler pointed out. The uniform crime records of the Federal Bureau of Investigation show that the total number of arrests of persons 16 to 21 years of age totaled 226,893 in 1936 as compared to 191,907 in 1933, an increase of 34,986. During the first three quarters of 1933 juvenile arrests were 116,403, and for the same period in 1937 they totaled 163,219—an increase of 46,816. "Traditionally," the Director continued, "it has been the practice of 'teen age youth to earn occasional spending money by odd-jobs which now go largely to heads of families. With the withdrawal of a source of income, or frequently because of absolute need in their homes and the withdrawal of relief funds, the turn to petty thievery has been inevitable."

Meanwhile, as Federal, state and local governments wrestled with the relief problem, the American Public Welfare Association reported a rise in relief cases and amounts of relief in 30 states. The figures cited were from a survey of 38 states for August through November, 1937, the period when the current business setback was just starting.

Two states, Idaho and West Virginia, reported a decrease in the number of cases but an increase in the amount of relief granted. States which reported decreases in both cases and amounts spent for relief were Arizona, Florida, Georgia, Nevada, North Carolina, and Pennsylvania. Oregon, with an increase of 51 per cent of relief cases, had the greatest rise of any state reporting. Michigan reported a 37.8 per cent increase and Indiana 33.1 per cent.

The Municipal Bond Market

The following are recent sales of new issues, reported in the February issues of *The Bond Buyer*:

Amount	Borrower and Purpose	Rate (%)	Term (Years	Basis (%)
$110,000	Indianapolis, Ind., City Hospital	1.5	4 Avg.	1.46
105,000	Stoneham, Mass., School	1.5	15.33 Avg.	1.495
350,000	Monroe, N. Y., Improvement	1.90	1-10 Ser.	1.85
213,762	Brookhaven, N. Y., Public Works	2	5.5 Avg.	1.99
160,000	Oconto Co., Wis., Highway	3	5.25 Avg.	2.08
150,000	Kirkwood, Mo., Public Sewer	2.5	13.5	2.38
113,800	Portsmouth, Ohio, Delinquent Tax	2.5	5.16 Avg.	2.42
300,000	St. Paul, Minn., Airport	2.60	10.75 Avg.	2.52
250,000	Washington Suburban Sanitary District, Md., Water, Series "M M"	3.5	13/50 Opt.	3.27

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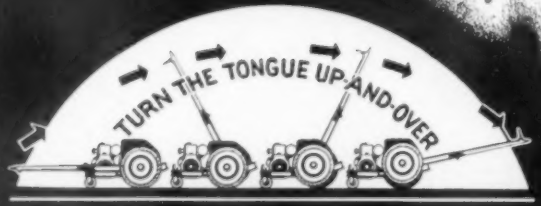

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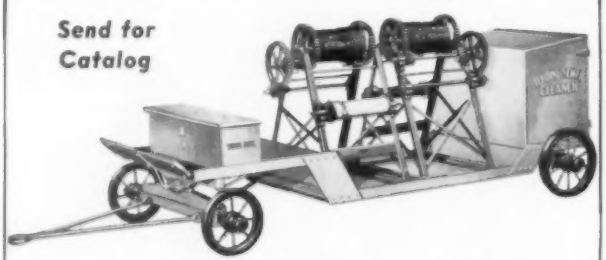

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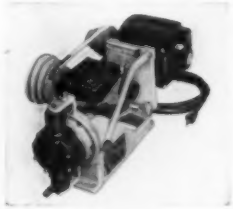

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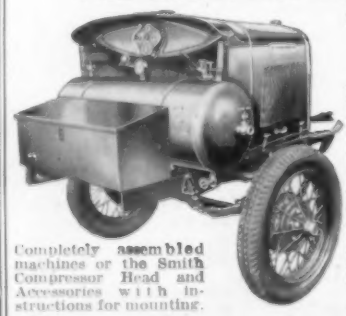

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Prepared by
FRANK B. WILLIAMS
Author of "The Law of City Planning and Zoning"

Zoning and Planning Notes

With the cooperation of
EDWARD M. BASSETT
Author of "Zoning: The Laws, Administration and Court Decisions During the First Twenty Years"

Residential District—Filling Station

IOWA.—*Scott v. City of Waterloo*, 274 N. W. 897 (Supreme Court, September 21, 1937).—This is an action contesting the validity of a permit issued by the city of Waterloo for the erection of a filling station. The ordinance under which the permit was issued made the area in which the filling station was to be erected a district within which, without first procuring from the city council a permit therefor, only residences and certain other structures could be erected. And this Court holds the permit to be valid. The fact that the ordinance contained no rules and regulations, permissible under the statute, does not invalidate it. A filling station is not a nuisance per se, and it cannot be presumed that it will be so run as to become a nuisance.

Board of Appeals—Variance for Hardship

KENTUCKY.—*Smith v. Selligman*, 109 S. W., 2d, 14 (Court of Appeals, October 5, 1937).—Refusal by board of appeals to allow a funeral home in a residential apartment zoning district, on the plea of hardship, is not an abuse of discretion, where in seven of the eleven districts into which the city was divided funeral homes were allowed.

Manufacturing—Zoning District

TEXAS.—*City of Amarillo v. Staff*, 109 S. W., 2d, 258 (Court of Civil Appeals, September 13, 1937).—A city zoning ordinance which forbade foundries in the first manufacturing district but permitted other plants which had objectionable features as to smell, light, noise and smoke, of equal or greater degree than the proposed foundry, was unreasonable, arbitrary and unenforceable as to a builder of the proposed foundry in the restricted area.

Zoning — One-Lot District

PENNSYLVANIA. — *Huebner v. Philadelphia Savings Fund Society*, 192 Atl. 139 (Superior Court, May 3, 1937).—Plaintiff's property was in a residential zone. In the immediate vicinity there were two or three neighborhood stores, which existed before the passage of the zoning ordinance; but otherwise the neighborhood was residential in its development. Plaintiff wished to convert his building, which was an old residential structure, into a funeral parlor and applied to the Board of Adjustment for permission to make this change. The Board denied the application, whereupon plaintiff applied to the City Council, which proceeded to make a commercial zone out of plaintiff's lot, thus creating a one-lot commercial zone surrounded by a residential zone. Thereupon the neighboring property owner brought an injunction for the invalidation of this special one-lot ordinance and to enjoin the funeral parlor. It was shown at the trial that the special ordinance would increase the value of the lot by $10,000 and depreciate the complaining neighbor's property by $1,500.

The Court held the special ordinance creating the one-lot zone to be unconstitutional and invalid, as it constituted a discrimination against other properties in the neighborhood and throughout the city. The Court pointed out that such discrimination is an inevitable consequence of making a district out of one lot. Incidentally, the Court upheld the constitutionality of the provisions of the ordinance relating to the powers of the Board of Adjustment, holding same to be a valid grant of administrative power and not a grant of a legislative function.

—From News Letter of American Society of Planning Officials.

State Commission Cannot Override Local Zoning Ordinance

To the Editor of ZONING AND PLANNING NOTES:

The decision mentioned in the following item from the *Natick Bulletin* is an illustration of the fact that the orders of a state commission cannot override a zoning by-law of a town. It is that of the Middlesex County Superior Court (Cambridge, Mass.), filed November 30, 1937, in the case of *James Ronan v. Board of Appeals, Town of Natick.*

The town has won its case against James Ronan over the granting of a certificate of occupancy for a building at South Natick, Judge Beaudreau of the Middlesex Superior Court denying the appeal of Ronan on Tuesday. The case goes back to last May when the Alcoholic Beverage Commission granted an all liquor license to Ronan after the Selectmen had refused to grant the license. A certificate of occupancy of the property for that purpose was refused by Building Inspector Bennett on the grounds that it was a detriment to adjacent property in the district, as defined by the zoning ordinances. Ronan appealed to the local Board of Appeals which upheld the Inspector and it was then taken to the Superior Court, and the town's decision upheld. It is the first case of its kind since the return of licensed liquor and it will undoubtedly be invoked in many other places to keep the operation of all liquor establishments from encroaching in certain business areas. Town Counsel Edward H. Connolly represented the town.

The local zoning regulations, which were adopted during the prohibition era as a part of the town Building Code, made no reference to the sale of intoxicating liquors, which, therefore, could be allowed only as an accessory to the sale of food in a "restaurant," one of the specified uses permitted in a business district. The Building Code also provided that "no accessory use shall be permitted that would be offensive to the neighborhood or detrimental to adjacent property." Here is the whole story of the case.

Ronan had carried on a lunch room for several years under a certificate of occupancy and use from the Inspector of Buildings, which specified the "sale of light wine and beer" as an accessory, which, under his original liquor license, could be served only at tables with food. His restaurant was on the edge of the small village center of South Natick, next door to a residence district, near the schoolhouse and church, and almost surrounded by parks and playgrounds.

In the spring of 1937 Ronan applied to the Selectmen for a license which would permit him to sell all kinds of alcoholic beverages over a bar, with or without food. The Selectmen refused to grant this license, and the State Alcoholic Beverage Control Commission then granted it, over their objections.

Thereupon the Inspector of Buildings warned Ronan that his certificate of occupancy and use would not allow him to operate under this license, for which he had paid, and refused to amend the certificate on the ground that such operation would be offensive to the neighborhood and detrimental to adjacent property, and therefore contrary to the Building Code. This opinion was confirmed by a hearing before the local Board of Appeals, which sustained the Inspector. Ronan then appealed from the Board's decision to the Superior Court. Judge Beaudreau's decision follows:

"I find that the certificate of occupancy and use issued by the Building Department of the town of Natick (Exhibit 3) was for the use as lunch room and tea room, including the sale of light wine and beer, and does not include the sale of alcoholic liquors; such a use is in violation of the Building Code of the town of Natick. The appeal of the petitioner is hereby denied."

HORACE B. GALE,
Secretary, Board of Appeals.
Natick, Mass.

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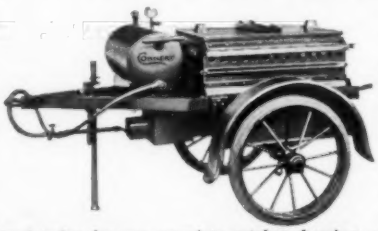

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The City's Legal Rights and Duties

Conducted by A. L. H. STREET, Attorney at Law

Accidents

City held liable for death of pedestrian electrocuted when he placed hand against municipal light pole (Kentucky Court of Appeals: *City of Madisonville v. Nisbet's Administrator*, 109 S. W. 2d, 593).

City and abutting property owner held liable to pedestrian who fell on ice that formed on sidewalk after falling from eaves of abutter's building (New York Supreme Court, Appellate Division: *Feinblum v. City of New York*, 299 N. Y. Supp. 320).

Pedestrian's fall at step-off between two different sidewalk levels held not to imply negligence of city (Kansas City Court of Appeals: *Sheridan v. City of St. Joseph*, 110 S. W. 2d, 371).

City held not liable to one who fell from step or platform on entering airport, on theory of defective construction or insufficient lighting (Kansas Supreme Court: *Mills v. City of Wichita*, 73 Pac. 2d, 1054).

Statutory notice to city of injury to pedestrian on sidewalk held insufficiently to show nature of injury (Connecticut Supreme Court of Errors: *Mascagna v. City of Derby*, 194 Atl. 728).

City held not liable for injury to child who fell from retaining wall along sidewalk (Ohio Court of Appeals, Trumbull County: *Rudibaugh v. City of Niles*, 11 N. E. 2d, 193).

City, not being bound to maintain street as safe for walking as sidewalks, held not liable for injury to one who stepped into hole in street (North Carolina Supreme Court: *Oliver v. City of Raleigh*, 193 S. E. 853).

Municipal liability under Workmen's Compensation Act held not to extend to an employee of an independent contractor who furnished a steam shovel for use on a WPA project (California Supreme Court: *City of Los Angeles v. Industrial Accident Commission*, 72 Pac. 2d, 540).

City's workmen's compensation liability to injured employee held not reduced by relief payments he received during his disability from a relief commission (Illinois Supreme Court: *City of Evanston v. Industrial Commission*, 10 N. E. 2d, 644).

City held not liable for injury to pedestrian who fell over a platform scale that projected only 4½ inches into a sidewalk space 9 feet wide (Mississippi Supreme Court: *City of Hazelhurst v. Matthews*, 176 So. 384).

Annexation

Annexation of wild land remote from municipality held invalid (Florida Supreme Court: *State v. Town of Boca Raton*, 177 So. 293). Land not benefited held not subject to annexation (Same Court: *Coral Gables v. State*, 177 So. 290).

Attorneys

City held not liable to attorney for services rendered at instance of taxpayers who intervened in a suit against the city, although services were beneficial to city (North Carolina Supreme Court: *Anten v. City of Asheville*, 193 S. E. 387).

Attorney held not entitled to recover for services to village in absence of showing that there was no regularly appointed village attorney and that the special employment had been approved by the Attorney General, as required by statute (Louisiana Court of Appeals: *Blanchard v. Village of Gonzales*, 176 So. 675).

Bond Issues

Statute authorizing release of penalties on delinquent assessments held void as impairing the rights of holders of municipal bonds to which such funds were applicable (Oklahoma Supreme Court: *Bonebrake Hardware Co. v. Miller*, 72 Pac. 2d, 351).

Statute providing that judgment against a city shall not be a lien on its property, etc., held inapplicable to bonds issued before the statute was enacted (Florida Supreme Court: *State v. Raulerson*, 176 So. 270).

Contracts

City held liable for breach of contract under which engineer was employed to plan and supervise sewer construction (Indiana Appellate Court: *Michigan City v. Brossman*, 11 N. E. 2d, 388).

Ratification by Council of contract by waterworks district to surrender to private company privilege of supplying water to consumers held vitiated by Council members' ownership of stock in company (Arkansas Supreme Court: *Gantt v. Arkansas Power & Light Co.*, 109 S. W. 2d, 1251).

Damage Claims

Failure to file verified claim with city held to preclude suit for damages caused by loose materials being washed onto plaintiff's land from city bridge abutments (California District Court of Appeals: *Yonker v. City of San Gabriel*, 73 Pac. 2d, 985).

Depositories

City Treasurer and surety held liable for loss of funds deposited in bank he knew to be unsound and that had not furnished proper security, despite statute permitting council to designate depositories (Michigan Supreme Court: *City of Bessemer v. Re*, 275 N. W. 811). But Treasurer held not liable for wrongful deposits by predecessor beyond his power to reclaim (Same Court: *City of Bessemer v. Korppi*, 275 N. W. 815).

National banks held empowered to pledge securities for protection of city deposits (Colorado Supreme Court: *Todd v. Elkins*, 72 Pac. 2d, 696).

Elections

Election of officer by council held not subject to reconsideration at a later meeting, although council ordinarily may reconsider ordinances, resolutions, etc. (Georgia Supreme Court: *Brewer v. Johnson*, 193 S. E. 778).

Fire Protection

City held not liable for fire loss of property owner, due to insufficient water pressure, negligence of firemen or defective fire-fighting equipment (New York Supreme Court, Appellate Division: *Hughes v. State*, 299 N. Y. Supp. 387).

Food Regulations

Ordinance forbidding sale of unpasteurized milk upheld (Arizona Supreme Court: *City of Phoenix v. Breuninger*, 72 Pac. 2d, 580).

Garbage Disposal

Ten-year contract with county for disposal of municipal refuse upheld (Michigan Supreme Court: *Bacon v. City of Detroit*, 275. N. W. 800).

Grade-Crossing Elimination

Contract of state, city and railroad for grade-crossing elimination, to be largely financed by Federal funds, upheld (Ohio Court of Appeals, Hamilton County: *Warm v. City of Cincinnati*, 11 N. E. 2d, 281).

Licenses

Power to license junk dealers held not to include power to license dealers in second-hand motor vehicles, tires, etc. (Illinois Supreme Court: *Bullman v. City of Chicago*, 10 N. E. 2d, 961).

Gross revenue taxes paid by public utilities held not deductible under license tax ordinance providing for deduction for "sales taxes" paid (Washington Supreme Court: *Seattle Gas Co. v. City of Seattle*, 73 Pac. 2d, 1312).

Municipal Utilities

City held empowered to extend its electric lines to serve city 17 miles away (Kansas Supreme Court: *Kansas Gas & Electric Co. v. City of McPherson*, 72 Pac. 2d, 985).

Under statute providing lien against real estate for water rates, statement of arrearages held sufficiently filed (New Jersey Court of Chancery: *New Brunswick Savings Institute v. City of New Brunswick*, 195 Atl. 301).

City held not empowered to do retail fuel business, though empowered to furnish heat to consumers (Michigan Supreme Court: *Toebe v. City of Munising*, 275 N. W. 744).

City's purported extension of light company's franchise held invalid and therefore did not preclude city from establishing competing plant (United States District Court, Western District of Tennessee, *West Tennessee Power & Light Co. v. City of Jackson*, 21 Fed. Supp. 57).

Official Bonds

Bond of Chief of Police, limited to his "term" of office, held to cover an indefinite term for which he was appointed (West Virginia Supreme Court of Appeals: *Town of Miller Fort v. Corbin*, 193 S. E. 560).

Official Compensation

Fractions of days held properly disregarded in computing a public officer's compensation on per diem basis (Pennsylvania Supreme Court: *Commonwealth v. Thomas*, 195 Atl. 103).

Official Oaths

Municipal officer held not required to take oath of office unless statute or charter so requires (Georgia Supreme Court: *Brewer v. Johnson*, 193 S. E. 778).

Ordinances

Recording of ordinances in council minutes held not essential (Texas Commission of Appeals: *Southwestern Lloyd v. City of Wheeler*, 109 S. W. 2d, 739).

Police Measures

Ordinance forbidding sale of malt beverages in grocery and meat stores upheld (Illinois Supreme Court: *Great A. & P. & Tea Co. v. Mayor & Commissioners of Danulle*, 11 N. E. 2d, 388).

Special Assessments

Special assessment warrants held to have become general municipal obligations through breach of city's duty to collect assessments (Nebraska Supreme Court: *Miller v. City of Scottsbluff*, 275 N. W. 158).

Street Improvements

Under charter, contract for sidewalk and curbing held invalid as to curbing for want of notice to abutting owners, curbing not being a necessary incident to sidewalks (Minnesota Supreme Court: *Nelson v. City of Willmar*, 276 N. W. 234).

Streets

Evidence held insufficient to show such prescriptive use of a strip of land, paved uniformly with an abutting public sidewalk, as to establish a public right to use the strip (Virginia Supreme Court of Appeals: *City of Staunton v. Augusta Corp.*, 193 S. E. 695).

Taxation

Home-rule city held empowered to levy higher taxes than permitted to other cities of like size (Nebraska Supreme Court: *Eppley Hotels Co. v. City of Lincoln*, 276 N. W. 196).

Taxpayer voluntarily paying tax under protest as to its validity held limited to ground stated in protest, on suing to recover payment, but payment involuntarily made is recoverable on any ground (Michigan Supreme Court: *Hudson Motor Car Co. v. City of Detroit*, 275 N. W. 770).

Traffic Regulations

Ordinance forbidding so driving motor vehicle as to indicate disregard for public safety held void for indefiniteness (Texas Court of Criminal Appeals: *Ex parte Meadows*, 109 S. W. 2d, 1061).

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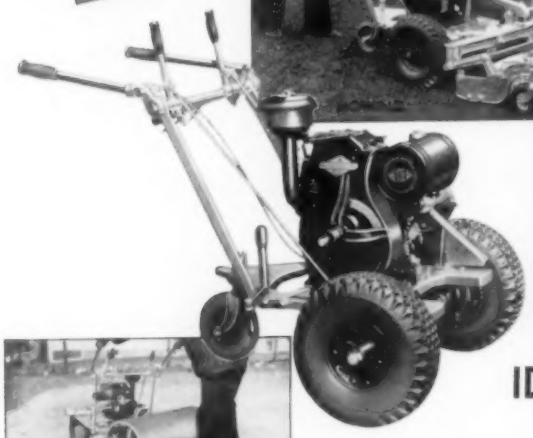

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Sewer Construction

The Construction of Main Sewers, and the Timbering of Excavations.—By C. G. Kent, M. Inst. C. E., assisted by J. C. Morris, Assoc. M. Inst. C. E. Longmans, Green and Co., New York. December, 1937. xi + 286 pp. $8.00 from THE AMERICAN CITY.

In his preface Mr. Kent points out that this book is largely the result of his experience with the Manchester, England, Main Drainage Scheme and includes photographs and diagrams of some of the work done by the Rivers Committee of the Manchester Corporation. The book is intended primarily for engineers who are responsible for the carrying-out of main sewer construction, and devotes nine chapters to the construction of sewers in tunnels, open-cut construction, methods of dealing with water in excavations, and manhole construction, and then such important details as shields, blasting, ventilation, records, tools and plant. The final portion of the book deals with the timbering of trenches, shafts and tunnels. This volume is replete with diagrams fully illustrating the methods described and a selected group of photographs of projects under construction.

Municipal Snow Removal

A publication entitled "Municipal Snow Removal and the Treatment of Icy Pavements" is the outcome of a study of effective procedures followed in 78 cities of the snow belt. It is a comprehensive statement, starting with a general description of what is involved in snow removal and pointing out the absolute necessity of a detailed plan for fighting snow when it comes without warning, as is usually the case. The special topics dealt with of a more or less technical nature come under the headings of "Plowing Snow," "Sweeping Snow," "Hosing Snow," "Snow Loading and Hauling," "Disposal of Snow," and "Eliminating Icy Conditions." The various methods and equipment used are discussed in some detail. 54 pp. $1.00. (Apply to the American Public Works Association, 850 East 58th St., Chicago, Ill.)

Planning for Low-Rent Housing

"Planning for Low-Rent Housing, A Non-Technical Guide for Local Housing Authorities" is an exceedingly valuable and timely publication. Since the establishment of the United States Housing Authority on principles of decentralization, many localities are setting up new authorities or waking up sleepy ones appointed during the past few years. Immediately, however, some of the less worldly towns and cities are baffled as to just what they are supposed to do in this new field. This pamphlet is designed to enlighten these local authorities and start them out on the right track. Its function, what it must know, and its budget, are outlined briefly. Then, in further detail, the four special duties of making basic surveys and forming conclusions, designing projects, managing projects, and, finally, cooperation with other agencies are described. The technical methods of making the required studies and preparing them for presentation are not covered in this booklet, but the practical job of planning for this work is well defined. No local housing authority should be without this helpful guide. 51 pp. $1.00. (Apply to the National Association of Housing Officials, 850 E. 58th St., Chicago, Ill.)

Status of Housing Projects

The United States Housing Authority has issued its first report on the "Status of Slum-Clearance and Low-Rent Housing Projects of the United States Housing Authority" since it took over the 51 projects initiated by the Housing Division of the Public Works Administration on November 1, 1937. The report indicates substantial progress to a point very near completion of the whole program. A large number of the individual projects are now occupied, and rental registrations are being received or tenant selection proceeding in most of the others. 28 pp. (Apply to the United States Housing Authority, Department of the Interior, Washington, D. C.)

Callable Municipal Bonds

The Call Feature in Municipal Bonds.—By the Committee on Municipal Debt Administration, Municipal Finance Officers' Association of the United States and Canada, 850 E. 58th St., Chicago, Ill. 1938. 118 pp. $1.50.

Municipalities which used the call feature from 1934 to 1937 reaped a harvest in savings, attracting considerable attention to this type of bond in municipal finance. This study examines the advantages and disadvantages of the optional feature in municipal bonds and shows when and how such bonds should be used. They are not recommended to take the place of serial bond issues, particularly in small municipalities where there is not a satisfactory sinking-fund administration, but, in the judgment of the writers, their careful use under certain restrictions should not be forbidden.

Water Pollution Research

"Water Pollution Research: Summary of Current Literature" has been issued for the first month of 1938 from the Department of Scientific and Industrial Research of the English government. These abstracts are published monthly and contain material on Water Supplies, Analysis and Examination of Water, Sewage, Trade Waste Waters, Pollution of Natural Waters, and a few miscellaneous subjects. 36 pp. 2s the copy; annual subscription 24s, post free. (Apply to His Majesty's Stationery Office, Adastral House, Kingsway, London, W.C.2, England.)

National Fire Codes

The National Fire Protection Association has just published a comprehensive volume of "National Fire Codes for Flammable Liquids and Gases." Prepared by technical committees of engineers concerned with the problem, the information presented is authoritative and should prove indispensable to the fire protection authorities of the various cities throughout the country. Thirty-six standards are given in the form of suggested ordinances, regulations, or recommended good practice requirements, each prefaced with an historical note. The Association has found it preferable to include only basic principles in the ordinances recommended for incorporation into the law, whereas the supplementary regulations contain the many technical requirements where they can be more readily kept up to date. The measures specified are aimed at the provision of reasonable fire-safety without prohibitive expense, interference with established industrial processes and methods, or undue inconvenience. 360 pp. $1.50. (Apply to the National Fire Protection Association, 60 Batterymarch St., Boston, Mass.)

Traffic Safety

"A Rational Approach to an Emotional Problem," by Paul G. Hoffman, President of the Automotive Safety Foundation, is an outline of what has been going on in the field of traffic accident reduction during the past year and a half. The Automotive Safety Foundation feels particularly responsible for the design and construction of safer vehicles as a primary step in traffic safety, but in addition it is actively concerned with a master highway plan and more safety education, increased enforcement of traffic ordinances, and better traffic engineering. A 7-point "Highway Safety Program for States to Increase Efficiency and Reduce Accidents," which has been endorsed by 12 organizations strongly interested in the field, is presented. 36 pp. (Apply to the Automotive Safety Foundation, 366 Madison Ave., New York.)

Streets and Highways

Information Bulletin No. 34 of the Association of Washington Cities contains the latest statistics on "Highway Mileages in Washington," "Distribution of State Collected Gasoline Tax," and "Expenditures for City Streets." 18 pp. (Apply to the Association of Washington Cities, Seattle, Wash.)

City Problems of 1937

City Problems of 1937, The Annual Proceedings of the United States Conference of Mayors.—Edited by Paul V. Betters. Published by the United States Conference of Mayors, 730 Jackson Place, Washington, D. C. v + 142 pp. $3.00.

After the "Presidential Address" by Mayor LaGuardia and two lone addresses on "The National Unemployment Census" and "Syphilis—A City Problem," the material presented in this volume falls under four main headings: "The Municipal Airport Problem"; "Government and Industrial Disputes"; "Relief and Unemployment"; and "Housing." The papers presented are particularly significant since they are confined to the few city problems which are at the very heart of today's concern.

Police Radio Frequencies

Police communication has seen tremendous progress over the past few years, causing considerable study on the part of the Federal Communications Commission as the principal regulatory body in the country. An informal conference was held with the Engineering Department of the Commission on December 9 and 10, 1937, to discuss the allocation of frequencies above 30,000 kilocycles to police radio stations. As a result of the statements made at the conference, 29 frequencies have been allotted to both municipal and state stations. The mimeographed report of the "Police Communications Conference" is available. (Apply to the Federal Communications Commission, Washington, D. C.)

Plumbing in Public Buildings

The health hazard of defective plumbing in public buildings has attracted widespread interest and concern during recent years. Consequently, in order to get some idea of the prevalence of plumbing defects in public buildings generally, two sample cities were selected for study by the Works Progress Administration under the direction of the United States Public Health Service, New York City, and Detroit, Mich. The summary of the survey, entitled "Public Health Hazards in Plumbing," contains tabulations of the comparative conditions found in the Federal buildings of two of the cities. The fixtures were rated solely on whether or not there was a definite path for contamination. No attempt was made to study the varied nature of conditions required for the spread of contamination in the buildings investigated. 37 pp. (Apply to the U. S. Public Health Service, Washington, D. C.)

Significance of Tests of Coal

In order to bring together some of the best experience on coal testing and the interpretation of its results, a "Symposium on Significance of Tests of Coal" has been published by the American Society for Testing Materials containing 6 papers of outstanding merit. The following subjects are presented: "Interpretation of Laboratory Coal Tests—Proximate Analysis and Calorific Value"; "The Significance to the Consumer of Sulfur in Coal"; "The Significance of Ash Softening Temperature and Ash Composition in the Utilization of Coal"; "Laboratory Tests Relating to Caking, Plastic, Gas- and Coke-Making Properties of Bituminous Coals"; "Significance of Friability and Size Stability Tests on Coal"; and "Pulverizer Performance as Affected by Grindability of Coal and Other Factors." The point of view of each author is supplemented by a discussion of each paper by other technologists. 132 pp. $1.00. (Apply to the American Society for Testing Materials, 260 S. Broad St., Philadelphia, Pa.)

A Social Study of Pittsburgh

The price of "A Social Study of Pittsburgh; Community Problems and Social Services of Allegheny County," by Philip Klein, reviewed in the February issue of THE AMERICAN CITY, is $4.75 and not $1.75 as listed in the review. (Columbia University Press, New York.)

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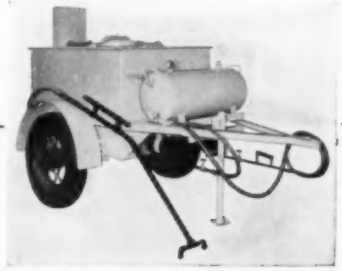

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New Homes in Old Countries

New Homes in Old Countries.—By Herbert Undeen Nelson and Marion Lawrence Nelson. Published by the National Association of Real Estate Boards, 22 W. Monroe St., Chicago, Ill. 1937. 123 pp. $1.25, *single copy;* $1.00 *each in lots of 10.*

This book is the outcome of a family motor trip in nine countries with interest somewhat centered on the dwellings of the people. The Nelsons observed that Sweden, England, Germany and Italy are making a definite drive to spread home ownership among their populations for purposes of stabilization and family security. In America, where home ownership is identified with insecurity, this seems incredible. But the European countries have taken two important steps which make all the difference—cut the financing charges in half and lifted half the taxes. Consequently, many new small homes and cooperative apartments have sprung up, giving the building industry the lift it needed in the depression years. In connection with this spread of home ownership the interesting fact should be pointed out that in many cases the *land* is not owned but rather leased from the government. This is especially widespread in Sweden. Ownership of the land by the government makes possible an increased amount of planning of the neighborhood for good design and sufficient open space, extremely important factors in protecting dwelling areas from the blight and inevitable decline to slums we have witnessed in the past.

Traffic Engineering Training

Last summer, for the first time, the Bureau of Street Traffic Research and the Institute of Traffic Engineers conducted an intensive two-weeks course in traffic control and regulation for the many interested public officials who can afford neither the time nor the money for extended graduate study. The most important fundamentals were covered in a series of lectures by thirty of the nation's outstanding traffic authorities. Outlines of all the lectures and complete reproductions of some are now available in a notebook entitled "Outlines and Lectures, The First Traffic Engineering Training School." This material should prove valuable not only to students of the school, but also as a reference for persons who did not attend the course. 224 pp. (Apply to the Bureau of Street Traffic Research, Harvard University, Cambridge, Mass.)

Explosions in Manholes

Intermittent explosions in manholes, conduits and other underground openings in Boston, Mass., have been causing loss of property and considerable inconvenience to users of light, power and telephone service. Consequently, the Bureau of Mines, in the interest of accident prevention, decided to undertake a careful investigation of the hazards in Boston as a case study. A systematic manhole survey was therefore conducted by the Bureau in cooperation with the Edison Electric Illuminating Co. of Boston and the Boston Consolidated Gas Co., in the hope that it might prove a valuable aid to other large cities in eliminating explosion hazards in underground openings. The published survey is entitled "Investigations During 1936 of Combustibles in Manholes in Boston, Mass." 24 pp. (Apply to the Bureau of Mines, Department of the Interior, Washington, D. C.)

Progress of the Works Program

The "Report on Progress of the Works Program, December, 1937" contains a general review of the program, followed by special sections on specific projects, employment, finances and the several public air programs that have been conducted by the Works Progress Administration. Particular emphasis is laid upon the 1937 accomplishments. As the many WPA projects approach and reach completion one cannot help but be impressed with the great contributions that have been made, measurable in terms of the increased beauty of our country, and better facilities for public welfare activities such as education and health. Roads have received a tremendous amount of needed attention. And at the same time the morale of many citizens has been saved by the provision of useful work in time of need. The text of this report is supplemented by charts presenting the numerical data accumulated on the works program in the uniform periodic reports required by the President. 112 pp. (Apply to the United States Government Printing Office, Washington, D. C.)

Traffic Survey

The circulatory system of "A Comprehensive City Plan for Flint, Michigan," has been established through the publication of "Part I, Traffic Survey and Thoroughfare Plan." The modern industrial city has become increasingly dependent on fast and uninterrupted transportation, but all too often improvements are confined within the factory gates, and the flow of workers and materials to the plants operate over a horse-and-buggy street system. In such a condition Flint finds itself. This study is an attempt to meet the situation by planning on engineering principles. It was found that the four major factories, Buick, Chevrolet, Fisher Body and A C Spark Plug, were well located about the downtown section at the four points of the compass. These, with the business center, were envisioned as the foci of five individual streams of traffic. Each stream was separated from the general flow by survey technique, and studied in its present operation. New routes were planned which more adequately meet its needs. The routes were recombined into a comprehensive circulation system in which each stream operates directly to its destination, separated in so far as possible from every other stream. This was accomplished by intensive use of all existing grade separations and open spaces, with a minimum of new construction. Land usage in relation to traffic was an important part of the study. In connection with the trucking routes, it was proposed to move the obsolete warehouses in the downtown section to a new distribution center on the outskirts. A rerouting of railroad operations was proposed to eliminate the downtown section of track. A band of parking lots about the business section was planned, serving the triple purpose of providing for storage of cars, forming a barrier to sprawling business growth, and protecting the feeder arteries from interference from business. The Survey provides a fifteen-year plan outlining in sequence the necessary improvements in order of their importance. The study is profusely illustrated with maps. 70 pp. 50c. (Apply to the Flint Institute of Research and Planning, 316 W. Water St., Flint, Mich.)

National Zoning Conference

The increased recognition of the importance of zoning reached a climax when the National Resources Committee held its National Zoning Conference in Chicago on December 13-14, 1937. The "Proceedings of the Summary Session of the National Zoning Conference" are now available upon request, and later the complete proceedings will be published. The Summary Session contains findings on urban, rural, flood plain, and recreational zoning, and discusses a positive program for zoning. 26 pp. (Apply to the National Resources Committee, North Interior Bldg., Washington, D. C.)

Oakland Real Property Survey

The Oakland City Planning Commission in cooperation with the Works Progress Administration has completed publication of a "1936 Real Property Survey" covering Oakland, Piedmont, San Leandro, and Eden Township, Alameda County. Volume I is entitled "Analyses and Summary of Data" and contains an explanatory text and a large amount of tabular material. Volume II, entitled "Graphic Analysis," contains 19 large maps which provide a clear picture of the distribution of different dwelling conditions. $2.50. (Apply to the Oakland City Planning Commission, Oakland, Calif.)

Public Employee Pension Funds

"*Dodge vs. Board of Education*, Summary of Decision Relative to Public Employee Pension Funds," is a case of considerable importance in its relation to the establishment of comprehensive pension laws for municipal employees, a group which is not included in the Social Security Act. The existence of compensation programs for certain groups of employees hinders the establishment of a comprehensive system because of possible contract rights involved. The question of what control the political authority that created the separate funds has over them, once created, is of importance in reorganizing the system, and the court case of *Dodge vs. Board of Education* is significant in indicating that state legislatures have considerable discretion. 9 pp. 50c. (Apply to the American Municipal Association, Drexel Ave. and 58th St., Chicago, Ill.)

Taxation

"Differential Taxation of Land and Buildings," by Harold S. Buttenheim, is an 8-page paper which was presented at the 1937 Conference of the National Association of Assessing Officers. The essential distinction between land and improvements is pointed out, making it clear that it is entirely unscientific, merely because they are both called "real estate," to tax them at the same rate. In the author's opinion, an increasing tax on land and a decreasing tax on buildings would be far more logical and economically sound than the present scheme. Land values would be forced down in inflated areas by reason of such taxation, speculation would be greatly reduced, since the joys of holding heavily taxed lands are few, and land would be much more generally available for improvement than it is at present. In Pittsburgh and Scranton, Pa., such a shift of tax rates has been introduced to a limited extent. As the general property tax is suffering a gradual breakdown in many states and cities in its present form, a scientific and economically sound method of revising it is urgently needed. 10c per copy; 5c in quantity. (Apply to THE AMERICAN CITY, 470 Fourth Ave., New York.)

A Housing Study Outline

The Housing Section of the Welfare Council of New York City has issued a second edition of "An Outline for a Housing Study Course." It contains patterns of study for 10 sessions on housing, designed to awaken an understanding of the social and economic disadvantages of bad housing and the advantages of adequate housing. Each lesson includes suggestions of subject matter and method of presentation, and a bibliography for sustaining reading. In connection with several lessons, specially prepared papers are included, such as "A Summary of Housing Regulations for the City of New York" and summaries of various housing laws. The subjects of the lessons are as follows: "Why Study the Housing Problem?"; "What is the History of Providing Adequate Shelter?"; "What Are the Present Conditions in Sub-Standard Housing—Their Underlying Causes and Effects?"; "What Attempts Have Been Made to Date to Improve Housing Conditions Through Legislation?"; "What Has Been Achieved by these Measures?"; "Organizations for Low-Cost Housing Operating without any Form of Government Aid or Control"; "What Part is the Federal Government Taking in Housing Today?"; "Objectives of a Housing Program and Students' Part in Promoting It"; "How Europe is Attempting to Solve Housing Problems." 67 pp. 40c. (Apply to the Housing Section, Welfare Council of New York City, 44 E. 23rd St., New York.)

Status of Planning Boards

The National Resources Committee has issued a revised edition, up to January 1, 1938, of "Status of Organization of State, Territorial and Regional Planning Boards and of Field Offices." State planning boards are now operating in 45 states. A map accompanying this publication indicates the locations of 9 new field offices of the National Resources Committee where counselors are located to provide general advisory service to state and regional planning boards. Names and addresses of organizations and their staffs are given. 31 pp. (Apply to the National Resources Committee, North Interior Building, Washington, D. C.)

Other Reports Received

CHICAGO, ILL.—"The Annual Appropriation Bill of the City of Chicago for the Year 1938." 158 pp.

DES MOINES, IOWA.—Annual Report, City Plan and Zoning Commission, 1936-1937. 33 pp.

HARTFORD, CONN.—Annual Report, Board of Park Commissioners and Division of Public Cemeteries, year ending March 31, 1937. 62 pp.

LOS ANGELES, CALIF.—Annual Report, Board of Public Works, year ending June 30, 1937. 143 pp.

MASSACHUSETTS.—Annual Report, Division of Town Planning, Department of Public Welfare, year ending November 30, 1937. 9 pp.

PROVIDENCE, R. I.—Annual Report, City Plan Commission, year 1937. 100 pp.

WEST BEND, WIS.—Annual Report, 1937. 47 pp.

WEST READING, PA.—Annual Report, 1937. 15 pp.

CHEVROLET

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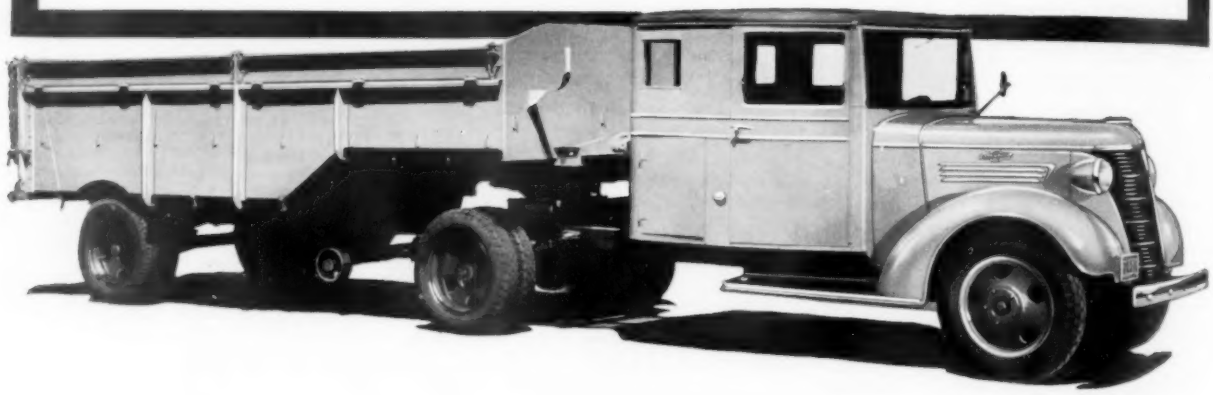

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THE SYMBOL OF SAVINGS

Conventions -- When and Where

(Figures in parentheses following the name of the convention city indicate the estimated attendance other than local)

Meeting is annual convention unless otherwise designated

MARCH 10-11.—TRENTON, N. J.
New Jersey Sewage Works Association. (Stacy-Trent Hotel.) Sec., John R. Downes, Bound Brook, N. J.

MARCH 17-18.—JAMESTOWN, N. Y.
American Water Works Association—New York Section. (Hotel Jamestown.) Sec., R. K. Blanchard, 50 W. 50th St., New York.

MARCH 21-23.—LOUISVILLE, KY.
American Water Works Association—Kentucky-Tennessee Section. (Brown Hotel.) Sec-Treas., Howard D. Schmidt, 420 Sixth Ave., N., Nashville, Tenn.

MARCH 21-22.—BOSTON, MASS.
Massachusetts Safety Conference. (Hotel Statler.) Gen. Mgr., Lewis E. MacBrayne, 80 Federal St., Boston, Mass.

MARCH 23-25.—WINDSOR, ONT.
American Water Works Association—Canadian Section. (Hotel Prince Edward.) Sec.-Treas., Dr. A. E. Berry, Dept. of Health, Parliament Bldg., Toronto 5, Ont.

MARCH 23-25.—ATLANTIC CITY, N. J.
New Jersey Mosquito Extermination Association. (Hotel Chalfonte-Haddon Hall.) Sec., Thomas J. Headlee, State Experiment Station, New Brunswick, N. J.

MARCH 24-26.—LAWRENCE, KANS.
Kansas Water and Sewage Works Association. (School of Engineering—Univ. of Kansas.) Sec.-Treas., E. Boyce, State Board of Health, Lawrence, Kans.

MARCH 28-30.—FAYETTEVILLE, ARK.
Arkansas Water and Sewage Works Conference. (Univ. of Arkansas.) Sec., Harrison Hale, Univ. of Arkansas, Fayetteville, Ark.

MARCH 28.—NORWALK, CONN.
New England Association of Commercial Executives. Sec., Peter Foley, Norwalk, Conn.

APRIL 3-5.—ATLANTA, GA.
Southern Commercial Secretaries' Association. Mgr., Stanley Draper, Chamber of Commerce, Oklahoma City, Okla.

APRIL 5-6.—DECATUR, ILL.
American Water Works Association—Illinois Section. (Orlando Hotel.) Sec.-Treas., W. D. Gerber, P. O. Box 232, Urbana, Ill.

APRIL 7-8.—LAFAYETTE, IND.
American Water Works Association—Indiana Section. (Purdue Union Bldg.) Sec., J. A. Bruhn, Box 855, Indianapolis, Ind.

APRIL 11-12.—WASHINGTON, D. C.
Conference of State and Territorial Health Officers of the United States Public Health Service. (Public Health Service Auditorium.) Address: Dr. Thomas Parran, Jr., Surgeon Gen., Treasury Dept., Washington, D. C.

APRIL 19-22.—NEW ORLEANS, LA.
The American Institute of Architects. (Roosevelt Hotel.) Exec. Sec., E. C. Kemper, 1741 New York Ave., Washington, D. C.

APRIL 20-23.—JACKSONVILLE, FLA.
American Society of Civil Engineers. Spring meeting. Sec., George T. Seabury, 33 W. 39th St., New York.

APRIL 20-22.—ST. LOUIS, MO.
Missouri Association of Public Utilities. (Jefferson Hotel.) Asst. Sec., Jesse Blythe, 101 W. High St., Jefferson City, Mo.

APRIL 24-28.—NEW ORLEANS, LA.
American Water Works Association. (Roosevelt Hotel.) Sec., Harry E. Jordan, 29 W. 39th St., New York.

MAY 2-5.—WASHINGTON, D. C.
Chamber of Commerce of the United States. Sec., D. A. Skinner, 1615 H St., N. W., Washington, D. C.

MAY 5-6.—COLUMBIA, MO.
Missouri Association of Mayors and Other Municipal Officials. (Hotel Tiger.) Exec. Sec., George A. Spencer, 412 Guitar Bldg., Columbia, Mo.

MAY 9-12.—ATLANTIC CITY, N. J.
National Fire Protection Association. (Haddon Hall.) M'ng Dir., Franklin H. Wentworth, 60 Batterymarch St., Boston, Mass.

MAY 9.—DANBURY, CONN.
New England Sewage Works Association. (Hotel Green.) Sec., F. W. Gilcreas, State Dept. of Health, Albany, N. Y.

MAY 11-14.—NORRIS PARK, TENN.
National Conference on State Parks. Exec. Sec., Miss Harlean James, 901 Union Trust Bldg., Washington, D. C.

MAY 13-14.—BOZEMAN, MONT.
American Water Works Association—Montana Section. (Baxter Hotel.) Sec., Herbert B. Foote, State Dept. of Health, Helena, Mont.

MAY 17-19.—CHICAGO, ILL.
Midwest Safety Conference. Mgr., George C. Traver, 222 N. Bank Drive, Chicago, Ill.

MAY 18-21.—WILKES-BARRE, PA.
Pennsylvania State Association of Township Commissioners. (Sterling Hotel.) Sec.-Treas., H. A. Fritschman, Eagle and Darby Rds., Upper Darby, Pa.

MAY 19-21.—SPOKANE, WASH.
American Water Works Association—Pacific Northwest Section. (Davenport Hotel.) Sec., Fred Merryfield, Oregon State College, Corvallis, Ore.

MAY 19-20.—BALTIMORE, MD.
Maryland-Delaware Water and Sewerage Association. (Emerson Hotel.) Sec., A. W. Blohm, 2411 N. Charles St., Baltimore, Md.

MAY 23-25.—DAYTONA BEACH, FLA.
American Water Works Association—Florida Section. Sec., J. R. Hoy, 404 Hildebrandt Bldg., Jacksonville, Fla.

MAY 23-26.—ST. LOUIS, MO.
National Association of Purchasing Agents. (Hotel Jefferson.) Sec.-Treas., G. A. Renard, 11 Park Pl., New York.

MAY 24-27.—NASHVILLE, TENN.
Smoke Prevention Association. (Andrew Jackson Hotel.) Sec., Frank A. Chambers, 1411 City Hall Square Bldg., Chicago, Ill.

MAY 25.—NEW MILFORD, N. J.
American Water Works Association—New Jersey Section. (Plant of the Hackensack Water Co.) Sec., P. S. Wilson, 325 Washington St., Glen Ridge, N. J.

JUNE 3-4.—BUFFALO, N. Y.
New York State Sewage Works Association. (Hotel Lafayette.) Sec.-Treas., A. S. Bedell, State Dept. of Health, Albany, N. Y.

JUNE 7-9.—ATLANTIC CITY, N. J.
Edison Electric Institute. M'ng Dir., Bernard F. Weadock, 420 Lexington Ave., New York.

JUNE 7-9.—STATE COLLEGE, PA.
Pennsylvania Water Works Operators' Association. (College Buildings.) Sec.-Treas., I. M. Glace, 22 S. 22d St., Harrisburg, Pa.

JUNE 8-10.—ELMIRA, N. Y.
Conference of Mayors and Other Municipal Officials of the State of New York. (Mark Twain Hotel.) Exec. Sec., William P. Capes, City Hall, Albany, N. Y.

JUNE 8-10.—STATE COLLEGE, PA.
Pennsylvania Sewage Works Association. (College Hotel—Nittany Lion.) Sec., L. D. Matter, Kirby Health Center, Wilkes-Barre, Pa.

JUNE 13-18.—KANSAS CITY, MO.
American Library Association. (Municipal Auditorium.) Sec., Carl H. Milam, 520 N. Michigan Ave., Chicago, Ill.

JUNE 15-16.—MITCHELL, S. DAK.
League of South Dakota Municipalities. (Widmann Hotel.) Sec., Dr. G. R. Breckenridge, Univ. of South Dakota, Vermilion, S. Dak.

JUNE 16-18.—BALTIMORE, MD.
Eastern Association of Fire Chiefs. (Lord Baltimore Hotel.) Sec., Charles E. Clark, Box 217, Wayne, Pa.

JUNE 20-24.—WASHINGTON, D. C.
American Institute of Electrical Engineers. Summer convention. (Mayflower Hotel.) Nat'l Sec., H. H. Henline, 33 W. 39th St., New York.

JUNE 20-22.—MINNEAPOLIS, MINN.
National Conference on Planning. Joint annual conference of American Planning and Civic Association, American Society of Planning Officials and American City Planning Institute. Exec. Dir., Walter H. Blucher, American Society of Planning Officials, 850 E. 58th St., Chicago, Ill.

JUNE 20-22.—HALIFAX, NOVA SCOTIA.
Canadian Public Health Association. Gen. Sec., Dr. J. T. Phair, Spadina House, Toronto, Ont.

JUNE 20-22.—ERIE, PA.
Pennsylvania State Association of Boroughs. Pres., Thomas F. Chrostwaite, Hanover, Pa.

JUNE 21-23.—BURLINGTON, VT.
New England Association of Fire Chiefs. (Hotel Vermont.) Sec., J. W. O'Hearn, Watertown, Mass.

JUNE 26-JULY 2.—SEATTLE, WASH.
Joint meeting. (Olympic Hotel.) *American Public Welfare Association.* Dir., Fred K. Hoehler, 850 E. 58th St., Chicago, Ill. *National Conference of Social Work.* Gen. Sec., Howard R. Knight, 82 N. High St., Columbus, Ohio.

JULY 24-29.—STANFORD UNIVERSITY, CALIF.
Western Conference for Commercial and Trade Executives. (Lagunita Court.) Business Mgr., Leonard E. Read, 433 California St., San Francisco, Calif.

JULY 25-28.—ALLENTOWN, PA.
Pennsylvania Chiefs of Police Association. Sec., F. B. Titus, Lansdowne, Pa.

AUGUST 13-20.—MEXICO CITY.
International Federation for Housing and Town Planning. Congress. Gen. Sec., Donald C. L. Murray, rue Cantersteen 47, Shell Bldg. 608, Brussels, Belgium. Mexican rep., Carlos Contreras, Ramos Arizpe No. 1, Mexico, D. F.

AUGUST 14-20.—EVANSTON, ILL.
National Institute for Commercial and Trade Organization Executives. (Northwestern Univ.) Sec., C. R. Miles, 836 First Nat'l Bank Bldg., Chicago, Ill.

AUGUST 29-31.—BURLINGTON, VT.
National Identification Association. Sec.-Treas., E. W. Livingston, Jamesville, N. Y.

SEPTEMBER 7-10.—PRINCETON, N. J.
Governmental Research Association. (Univ. Graduate School.) Sec.-Treas., Robert M. Paige, 850 E. 58th St., Chicago, Ill.

SEPTEMBER 12-15.—BALTIMORE, MD.
International Municipal Signal Association, Inc. (Lord Baltimore Hotel.) Sec., Irvin Shulsinger, 7 E. 42nd St., New York.

SEPTEMBER 13-16.—BOSTON, MASS.
New England Water Works Association. (Hotel Statler.) Sec., Frank J. Gifford, 613 Statler Bldg., Boston, Mass.

SEPTEMBER 18-22.—MILWAUKEE, WIS.
American Institute of Park Executives. Exec. Sec., Will O. Doolittle, Box 422, Tulsa, Okla.

SEPTEMBER 19-22.—ATLANTIC CITY, N. J.
American Transit Association. (Atlantic City Auditorium.) Gen. Sec., Guy C. Hecker, 292 Madison Ave., New York.

OCTOBER 3-7.—PITTSBURGH, PA.
National Recreation Association. (William Penn Hotel.) Administrative Sec., Thomas E. Rivers, 315 Fourth Avenue, New York.

OCTOBER 6-8.—HARTFORD, CONN.
Joint meeting. (Hotel Bond.) *New England Sewage Works Association.* Sec., F. W. Gilcreas, State Dept. of Health, Albany, N. Y. *New York State Sewage Works Association.* Sec.-Treas., A. S. Bedell, State Dept. of Health, Albany, N. Y.

OCTOBER 10-14.—CHICAGO, ILL.
National Safety Council (Stevens Hotel.) M'ng Dir., W. H. Cameron, 20 N. Wacker Drive, Chicago, Ill.

When trees sway - lines chafe

Every time trees sway, your lines that run through them chafe and the insulation gets thinner and thinner. Then some day arcs will appear in the trees, the volt meters in your station will start to do a shimmy, and good radio reception in the neighborhood will approach the vanishing point; all this will be followed by the inevitable complaints.

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Simplex-FIBREX Tree Wire is a non-metallic, non-inductive wire especially designed for overhead lines passing through trees and subject to abrasion from swaying limbs and branches.

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News and Illustrations

Items of Interest to City, Town and County Officials, and Others Concerned with the Economical Construction and Efficient Operation of Public Improvement Undertakings

A WALTER SNOW FIGHTER WITH A 15-YARD ENCLOSED REFUSE BODY, OWNED BY THE VILLAGE OF RIDGEFIELD PARK, N. J.

Modern Refuse Truck and Snow Fighter

Municipalities are always looking for equipment which can perform a dual service. The Walter Model FCS four-point positive-drive Snow Fighter, equipped with a center scraper plow and mounting a 15-yard enclosed refuse body, makes a mobile unit admirably suited to municipal service. This model is powered with a 120-hp six-cylinder engine and the truck is rated at 5- to 7-ton capacity. The center scraper plow removes hard-packed snow formed by traffic and thus prevents the formation of the thick ice so dangerous to pedestrians and eliminates the possibility of ice ruts. The center blade is reversible, so that snow can be plowed to either side to meet variable traffic conditions.

These trucks, made by the Walter Motor Truck Co., Inc., Ridgewood, L. I., N. Y., are advantageous for work outside the snow season, for they may be equipped with refuse bodies and can deliver their load over bad land fills without difficulty because of the four-point positive drive. With flusher tanks they have been used to good advantage, and with the surplus power of the motor there is no need of an extra power plant to drive the flusher pump.

Improvements in Mud Pump Unit

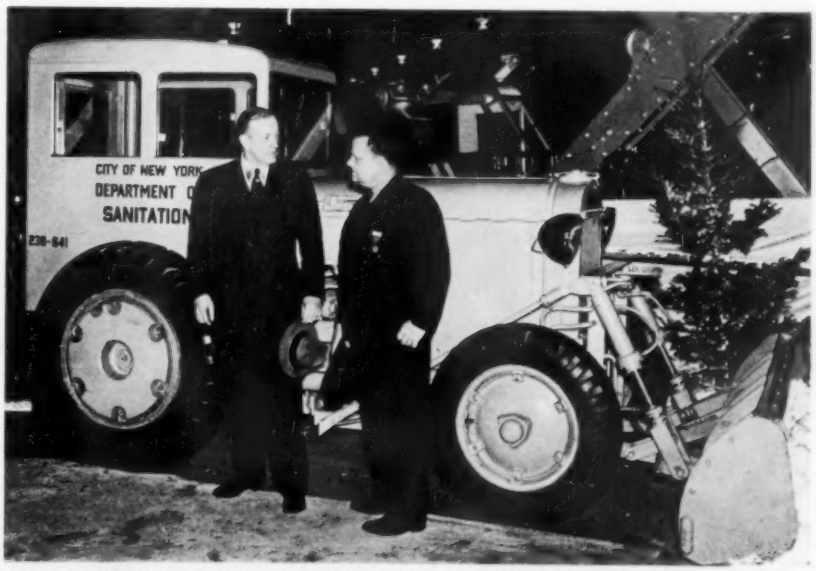
Among the many pieces of standard equipment displayed at the 1938 Road Show in which small but important improvements have been made is the Mud Jack of the Koehring Co., Milwaukee, Wis. The two cylinder heads of the Mud Jack now pump through one valve which is self-cleaning so that any grass or sticky clay is immediately removed from the valve. A 3-inch solid steel ball acts as a check and permits practically a continuous flow of material in one direction through the valves through the two cylinder heads. A special new plug-valve at the end of the machine permits attaching two hose lines, which increases the yardage that can be handled by the machine by about 60 per cent. The pump cannot pump to two holes at once because of unequal pressure, but the quick change from one hose to the other possible with this valve, in which roots cannot become caught, is the reason for this output.

The pump capacity has become increased by eliminating the skirt and the piston. This reduces wear on the cylinder in sandy material. The piston valve is still the same and is mounted on the piston rod so that the valve is cleared at each stroke. Other improvements in the machine tend toward greater safety and convenience of operation by better housing and a general streamlined appearance.

Paint Removal by Power Cutters

Frank E. Aurand, Jr., formerly associated with the Concrete Surfacing Machinery Co., Cincinnati, Ohio, has bought from that company the Berg Cleaning Tool Division, including patents, and is expanding and carrying on the cleaning-tool business under a corporate organization, Aurand Manufacturing Co., at 2643 Colerain Avenue, Cincinnati.

Aurand (formerly Berg) cleaning tools are used for the removal of old paint or adhering accumulations of foreign matter from metal or other rigid surfaces. The cleaning or chipping action is done by a large number of cutters loosely fastened to a rotating head. The cutters are thrown against the surface to be cleaned by centrifugal force instead of by positive geared drive. The tools are portable and used by hand, and are powered either by compressed air or by a self-contained electric motor.



W. P. MCDONALD, FORMER PRESIDENT OF THE AMERICAN ROAD BUILDERS' ASSOCIATION, AND W. M. PARRISH (RIGHT), SALES EXECUTIVE, INTERNATIONAL HARVESTER CO., AT THE COMPANY'S EXTENSIVE EXHIBIT AT THE ROAD SHOW IN CLEVELAND LAST JANUARY

16% FEWER CRIMES ..5% MORE ARRESTS

San Francisco Police work fast with Western Electric Radio

San Francisco's police radio system provides 1-way communication with 112 police cars and 37 motorcycles patroling 44.2 square miles, and with 1 police boat on the bay. Before Western Electric radio was installed in 1931, patrols called-in half hourly—sometimes contact could not be made for 30 minutes. Now—alarms are responded to in from 30 seconds to 1½ minutes.

The year after radio joined the force, burglary and robbery insurance rates were cut about 25%. Last year the value of property recovered was nearly $185,000. Crimes in 1937 showed a *decrease* of 16% from 1936; arrests increased about 5%. Radio played an important part in *all* these improvements.

San Francisco uses its police radio transmitter also for communicating with 19 fire department cars, 2 fire boats, 12 ambulances and 14 city officials' cars. In addition it serves Daly City, South San Francisco, San Bruno, the California Highway Patrol, the Federal Bureau of Identification and the U. S. Treasury Department.

In communities of every size, Western Electric radio is getting results 24 hours a day. For full details on equipment to help solve *your* problem: Graybar Electric, Graybar Building, New York.

Bandits captured at bank door

Two men held up the American Trust Co., California and Fillmore Streets. Alarm was tripped by employees—call was broadcast to radio cars, the nearest of which was 12 blocks away. Result: Bandits (both ex-convicts) captured as they stepped from the bank *90 seconds* after the alarm was sounded.

Distributed by GRAYBAR ELECTRIC COMPANY

Western Electric Police Radio is giving added protection to 45,000,000 people.

Western Electric

Distributed by GRAYBAR Electric Co. In Canada: Northern Electric Co., Ltd.

POLICE RADIO TELEPHONE EQUIPMENT

THE MURRAY CROWSNEST IN SERVICE

Safety Ladder for Municipal Utilities

The hazards of street and traffic light maintenance in crowded streets and the precarious positions encountered in trimming trees require the greatest of care on the part of municipal employees. The Murray demountable Crowsnest, made by Metropolitan Device Corporation, 1250 Atlantic Avenue, Brooklyn, N. Y., provides the essentials of an all-purpose ladder rig mounted on a truck for this work. The side rails are of aeroplane Sitka spruce conforming to Army and Navy specifications. The rungs are straight grained hickory reinforced both top and bottom with cadmium-plated steel rods. There are two combination ferrule-braces on each rung. The surface area of the brace bears directly against the side rail and is bolted to it. The A-frame is a one-piece cast steel spider which rotates on four bronze bearing rollers. It is mounted on the chassis with a 1¼-inch machined steel king-bolt. The channel uprights are braced to withstand all necessary strains and stresses. The trusses are cast bronze struts and anchor plates, with cold rolled steel strain rods.

Counterweights speed the raising of this ladder, and it is locked in position semi-automatically. Single-sheave pulleys hasten its extension, and bronze bearing rollers make it possible to rotate it to position quickly. The semi-automatic locking is effected by the movement of two sleeves which actuate the locking pins. Minimum locking-pin hole clearances hold the ladder rigid, and space tolerance between the counterweights and inclination channels braces the ladder against side sway.

Koppers Acquires Michigan Valve

Koppers Company, Pittsburgh, Pa., has announced that it has acquired exclusive rights to the manufacture and sale of the line of valves and other water-works and sewerage equipment formerly produced by the Michigan Valve and Foundry Division of the Timken-Detroit Axle Co. It reports that production of the line will not be interrupted and it will be produced under its present trade name by Koppers Company Western Gas Division, Fort Wayne, Ind., and will be added to its "Western" line of valves, sluice-gates and similar equipment. All drawings and patterns for the "Michigan" line have been supplied to Koppers, so that it is fully equipped to manufacture new equipment and replacement parts.

Utility Bodies for Motor Trucks

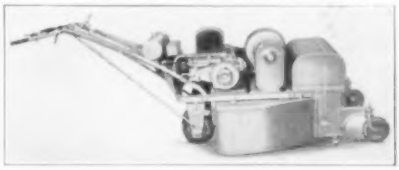
A number of improvements and refinements have been incorporated in the new utility body developed by Baker-Raulang Co., West 80th Street, Cleveland, Ohio. The new Weathertight doors are made definitely weatherproof by a new and exclusive patented construction so that water, rain or wash cannot get into the compartment. This feature is of vital importance in electric construction and maintenance work.

Safety is secured by improved general over-all body design. In a practical manner the pike poles and derrick legs are wholly enclosed, and the ladders are recessed within the outside body lines, placing these bodies ahead of state highway safety regulations. A new line of crew-carrying cabs are included, the all-steel bodies being designed for crews of five, six or seven men and for use on either the conventional type of chassis or the newer cab-over-engine models.

The new Baker trailers are shown in the latest Baker catalog for the first time, including pole trailers, cable splicing trailers, line material trailers and pole dinkey. The catalog also shows a full line of electric utility winches for take-offs and derricks.

Motor-Driven Sweeper for Street Cleaning

A new small sweeper operated and controlled much like the well-known gang mowers seen in city parks, has been developed by The Foote Co., Inc., Nunda, N. Y., for cleaning gutters, streets, drives, convention halls, platforms and docks. This MultiSweep is a combination broom and full vacuum type sweeper. Dust and dirt are fully recovered and collected in containers. It sweeps a path 30 inches wide and delivers coarse material to two pans located in the front of the machine and of about 1½ cubic feet capacity each. The fines are caught in dust bags,

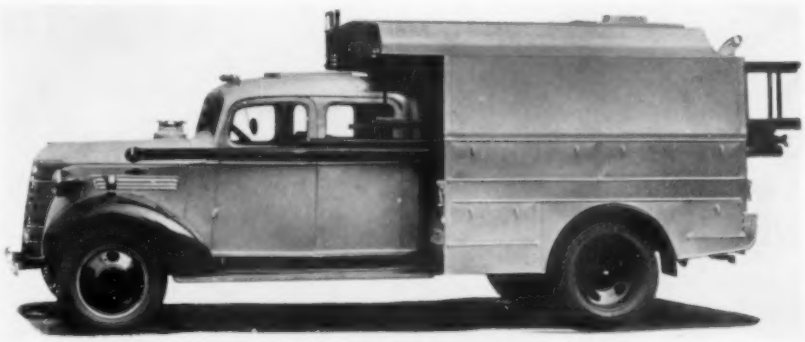


THE NEW FOOTE MULTISWEEP

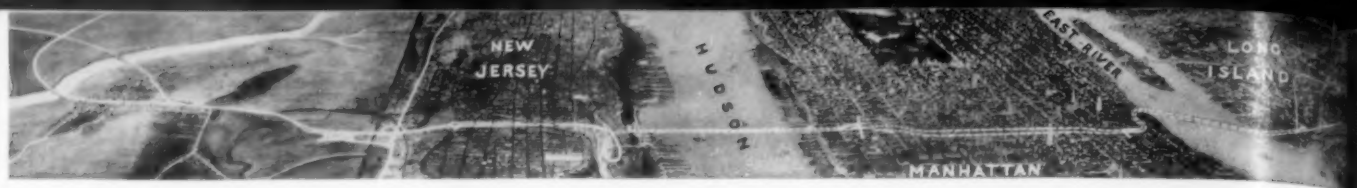
so that no dust is delivered into the air.

The whole machine rides on four driving wheels and has two caster wheels in front. Complete control of the Briggs & Stratton 2-cylinder, 3-hp engine which drives the machine is located on the handlebars. The multiple fiber brooms throw the coarse material into the pans, and the integral blower delivers the fines into the dust bag. The machine travels at a maximum rate of 4 miles per hour, and speeds may be reduced where desired. A specially designed curb brush assures cleaning close to a wall or curb.

American Water Works Association
58th Annual Convention
New Orleans, La.
April 25-28, 1938



ONE OF THE NEW MODEL 1480 BAKER ALL-STEEL LINE BODIES MOUNTED ON A CHEVROLET 1½-TON CHASSIS WITH A 157-INCH WHEELBASE



PORT OF NEW YORK AUTHORITY

Uses Brick

FOR LINCOLN TUNNEL PAVING

• Under the Hudson River at 38th Street, the brick pavement in the new mid-town Lincoln Tunnel carries 500,000 cars, trucks, and buses monthly. The second tube is now being built. Later, Lincoln Tunnel will connect with a vehicular tunnel to be built under Manhattan Island.

Lincoln Tunnel is more than 8,000 feet long and cost $37,500,000. It was built by the Port of New York Authority which had previously used brick pavement on an approach of the Holland Tube. Brick's non-skid surface, durability and freedom from repair under concentrated traffic make it a wise choice. National Paving Brick Association, National Press Building, Washington, D. C.

BRICK

THE KENNISON SEWAGE METERING NOZZLE

Open Flow Nozzle Measures Sewage

An open flow nozzle invented and developed by Karl R. Kennison, Metropolitan District Water Supply Commission of Boston, for accurately measuring the flow of sewage continuously is now in production by the Builders Iron Foundry, Providence, R. I. The inventor describes the nozzle as follows: "The open nozzle is simply an open pipe end which has been contracted exactly the right amount and manner so that the normal flow in the pipe is not disturbed until just at the end of the pipe. In other words, there is no increase of velocity which would decrease the depth and result in an unsatisfactory flat rating curve. Neither is there any reduction in velocity the same as would be the case back of a V-notch weir, for example, which would result in deposition of solids requiring constant attention to cleaning."

A typical 10-inch diameter nozzle is shown in the accompanying illustration. When installed, the casting is bolted to the main through which the sewage is flowing, with a free discharge at the shaped end. Usually the top is left open, as shown, for occasional inspection. At the bottom, near the flange, a tapped hole is provided for the single connection of a relatively large pressure pipe to the open float chamber of the recording instrument.

Three of these nozzle meters were installed in 1934 on pipe lines where it was necessary to meter domestic sewage incidental to the Ware River project of the Metropolitan District Water Supply Commission of Boston. Their continued success shows the usefulness of these nozzles in the metering of raw sewage and trade wastes in collecting sewer systems or upon arrival at a treatment plant, as well as for measuring free-flowing sludges.

A Gravity Traffic Line Marker

The Aeroil DeLuxe traffic line marker made by Aeroil Burner Co., Inc., West New York, N. J., operates entirely by gravity and contains no pump, engines, spray nozzles or wheel bands. It lays down uniformly painted lines from 2 inches to 8 inches in width. One spreader paints any of these widths, taking only a short time to change the width.

A specially welded 8-gallon paint reservoir of heavy gage rust-resisting steel is built with the tank bottom inclined to the outlet to insure complete drainage. A removable bronze strainer keeps skins and foreign matter out of the paint, and a cover retards drying and gumming.

A rotary steel wire brush supported on ball bearings and friction-driven cleans the pavement ahead of the application of the paint. A welded solvent tank, which is detachable, on the front of the machine, holds the spreader when it is not in use and keeps it clean for instant service. A welded touch-up brush container is mounted on the rear of the main tank.

New features, not found in any other type of marker, include an automatic range finder that keeps the marker in the middle of the road without guide lines, and attachments for marking varied lines in colors and for laying the new glass reflective beads right in the paint.

THE AEROIL TRAFFIC LINE MARKER

The machine rolls on three balloon pneumatic tires, 10 x 2.75. All controls are within easy reach of the operator of this one-man machine. Full details and prices may be secured direct from the manufacturer by mentioning this magazine.

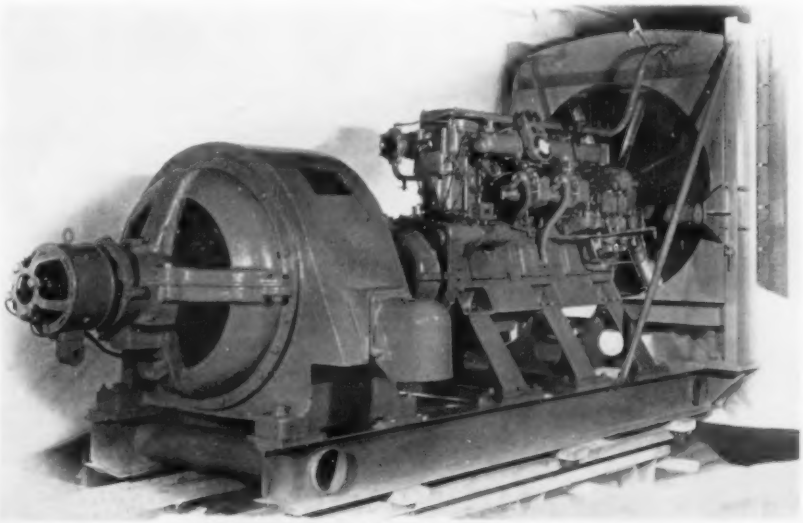
New Advertising Manager of Steel Corp.

Carnegie-Illinois Steel Corporation, Pittsburgh, Pa., has announced the appointment of G. Reed Schreiner as Advertising Manager. He has been Assistant Advertising Manager of Carnegie-Illinois since the organization of the company on October 1, 1935, and now succeeds Charles R. Moffatt, recently appointed Director of Advertising of the United States Steel Corporation of Delaware.

Engine Truck-Mounted for Electrical Tests

A Sterling Dolphin 6-cylinder gasoline engine, 240-hp, 1,800-rpm, direct-connected through a Thermoid coupling to a 150-kw GE generator, has been mounted on a light-weight structural steel skid for truck hauling by the Philadelphia Electric Co., Philadelphia, Pa., for the inspection of instruments and tests. The engine is cooled with a Young radiator designed for the maximum output of the engine. The whole outfit has been developed within the weight restrictions of the Philadelphia City Street Department. The unit weighs 11,160 pounds and it will be used to furnish power for large buildings when utility power is disconnected for periodical inspection and repairs of equipment.

The engine, manufactured by the Sterling Engine Co., 1252-74 Niagara Street, Buffalo, N. Y., has six cylinders, a bore of 5¾ inches and a stroke of 6¾ inches, and is built with a counterweighted crankshaft, dual valves in the head, oil filters, electric starter, starting batteries, and generator for charging these batteries. The Sterling Thermoid flexible coupling is enclosed within the flywheel housing. The governor regulation is very close, within 3 per cent on full load or part load changes. This is believed to be one of the most compact high-powered generator units in this country.



THE STERLING TEST OUTFIT MOUNTED ON SKIDS

Widen THE RANGE

. . . of Selective Enforcement with Motorcycles

TRAFFIC executives agree that "Selective Enforcement" is a most effective method of reducing the toll of accidents and deaths—and of apprehending law violators. This is accomplished by assigning police officers to specific danger points during hours of highest accident frequency to safeguard against traffic violations which cause most accidents.

Not only are Harley-Davidson Motorcycles preferred by police departments for this new trend to "Selective Enforcement"—but they enable enforcement executives to extend this highly efficient method over a greater area. Their outstanding engineering features, dependability, and low cost of operation and maintenance make Harley-Davidson Motorcycles the best for police work.

HARLEY-DAVIDSON MOTOR CO., Dept. M-338, Milwaukee, Wisconsin

Harley-Davidson

THE POLICE MOTORCYCLE

Why not remember to mention THE AMERICAN CITY?

AN INTERNATIONAL HIGHWAY MOWER ON THE GROUNDS OF THE ARKANSAS CAPITOL AT LITTLE ROCK

Highway Mowing Units

International-Harvester highway mowers for cutting grass and weeds along the roadsides are available in two types, the No. 30 mower for the International I-30 and Model 20 tractors and the No. 112-V mower for the I-12 and Fairway 12 tractors. They are compact power-operated units attached directly to the rear of the tractor so that mower and tractor form a single easily-maneuvered outfit controlled by the tractor driver. By operating through the power take-off shaft of the tractor, the mower is independent of ground traction. These mowers are quickly and easily attached and detached, enabling the tractor to be released for other work when desired.

Nos. 30 and 112-V mowers are available in 5-, 6-, and 7-foot cutting widths. Standard mower bars have steel guards spaced 3 inches apart. Two knives are regularly supplied with each mower. The units are built to close precision, of high-grade materials. The drive gears are accurately machined, fully enclosed and run in oil. The coupling bar is drop-forged steel, the cutter bar is heat-treated and oil-tempered, and various other parts of the mower are heat-treated or hardened to resist wear. A slight bend upward, permanently incorporated in the structure of the steel itself, is given the cutter bar, in order to counteract any tendency to sag when the bar is fully assembled, and assures a flat bed for the knife to run upon even after years of hard service, according to the manufacturer. The knife runs on hardened steel wearing plates which are adjustable for wear. Another feature is the automatic pitman connection to the knife head, held in proper adjustment by spring tension. A pivoted toggle arrangement allows the pitman to operate without binding when the cutter bar is raised or lowered to extreme angles. Both of these mowers have a full vertical lift, making it possible to cut close to a pole, tree or other obstruction.

Safety features include a safety slip clutch on the power drive shaft to prevent slip and breakage should the cutter bar or other working parts become clogged. Another is the breakaway feature which allows the bar to swing back out of the way when an obstruction is encountered.

Complete details on these modern highway units are found in an 8-page booklet, copies of which may be secured direct from the International Harvester Co., 180 North Michigan Avenue, Chicago, Ill.

Advertising Director of U. S. Steel Corporation

U. S. Steel Corporation has announced the appointment of Charles R. Moffatt as Director of Advertising. Mr. Moffatt has been Advertising Manager of Carnegie-Illinois Steel Corporation since the organization of that company in 1935, and Director of Exhibits of U. S. Steel Corporation since July, 1935. The new office of Director of Advertising, combining advertising and exhibit activities, will be located at 436 Seventh Avenue, Pittsburgh, Pa.

CHARLES R. MOFFATT, DIRECTOR OF ADVERTISING, UNITED STATES STEEL CORPORATION

Allis-Chalmers Reorganizes Publicity Dept.

Allis-Chalmers Manufacturing Co., Milwaukee, Wis., has announced that its publicity department for power, electrical and industrial machinery now has two sections. George Callos has been appointed Assistant Manager in charge of sales promotion, embracing advertising, bulletins, exhibitions, house organs, etc. A. K. Birch has been appointed Assistant Manager in charge of market analysis and sales organization service, embracing price books, data and sales information and the distribution of literature.

Protecting Metals at Sewage-Treatment Works

With the increasing treatment of sewage with chemicals to produce an inert or bacteriologically sterile sewage, many forms of chlorine, including ferric chloride, are used. These require that all metal equipment subjected to the action of these chemicals be protected from their corrosive action.

The Goodyear Tire & Rubber Co., Inc., Akron, Ohio, has announced a new rubber lining for metal tanks to protect them against the action of corrosive liquids. Important in this new development is the fact that the adhesive with which Plioweld, the protective element, is applied to tanks is a rubber derivative applied to the clean metal which actually welds the resilient rubber to the metal during the process of vulcanization. The actual thickness of the new lining is 3/16-inch, and the product is applicable to all shapes and sizes of tanks made of wood, steel and aluminum.

The ferric chloride used at treatment plants may be either purchased in tank-car lots and stored in Goodyear Plioweld-lined tanks at the plant, or may be produced by chemical reaction in suitable equipment as required and stored in Plioweld-lined equipment. In addition to the storage tanks, dilution tanks, mixing tanks, piping and valves all can be protected with Plioweld. In some types of plants also sludge-conditioning tanks, vacuum filters and vacuum separators with their accessory piping and control valves require similar protection from corrosion.

The various chlorine compounds that are commonly used in the several systems of sewage treatment present no serious problems so far as protection of the equipment from corrosion is concerned. However, where dry chlorine gas is involved, there has been a problem in that the general run of rubber compounds have not been capable of resisting the action of the elements in this state. As soon as the moisture is available for the chlorine to unite with and become a saturated gas or a water solution, the problem disappears.

The services of the Engineering Section of the Goodyear organization are available to engineers and to cities to make up detailed designs based on general drawings for the application of Plioweld. Two complete and three partial installations in sewage-treatment plants in a two-year interval have shown the value of this service.

APPLYING A PLIOWELD LINING TO A PIECE OF SEWAGE-WORKS EQUIPMENT AT THE GOODYEAR FACTORY IN AKRON

3 HAZARD UNDERGROUND CABLES for Direct Burial

1. HAZARD PARKWAY CABLE. A lead sheath protects the insulated conductor from moisture, and the two flat steel tapes afford mechanical protection. Sometimes made with a single "S" shaped interlocked steel tape armor (Hazard Loxsteel).

Thousands of miles of this Armored Parkway Cable are in constant use, installed during the past twenty years and more.

2. HAZARD ARMORTITE CABLE. A *non-metallic* armored underground cable, originally designed for 20 ampere series street lighting circuits where the magnetic effect of the steel tapes made the use of lead and steel armored cable prohibitive.

Armortite is a cable for street, airport and athletic field lighting, for power circuits between buildings, and for underground entrance circuits. It is ideal for marshy locations where steel armor would quickly corrode.

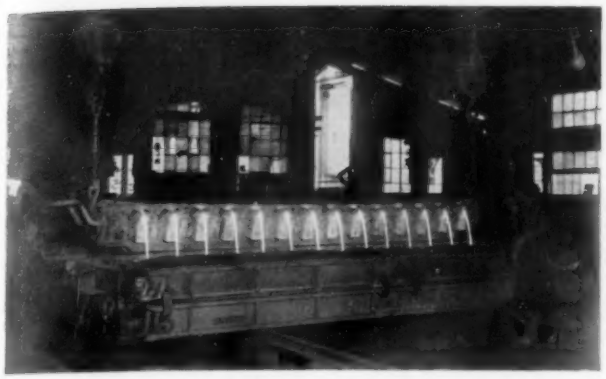
Hazard Submarine Rubber Insulation, and the peculiarly effective protective coverings make Armortite the outstanding underground cable. Its excellent service report proves this. Its armor consisting of resilient, long lasting jackets, is not affected by moisture, acids or alkalis.

3. HAZASHEATH CABLE. A comparatively recent type of *non-metallic* armored underground cable for burial in the soil without ducts. Hazard Submarine Rubber Insulation, with a simple armor of 60% *tough* rubber, vulcanized in metal molds, is exceedingly dense, strong, moisture resistant and long aging. Its simplicity of construction cuts cost of installation, splicing, and connecting.

Its size, weight and cost are approximately the same as Armortite Cable.

HAZARD INSULATED WIRE WORKS

DIVISION OF WILKES-BARRE — THE OKONITE CO. PENNSYLVANIA



POURING IRON FROM A MULTIPLE-LIP LADLE AT THE FOUNDRY OF THE McWANE CAST IRON PIPE CO., BIRMINGHAM, ALA.

Trips to A.W.W.A. Meeting in New Orleans

The Transportation Committee, John S. Warde, Chairman, of the American Water Works Association has arranged a tour to precede the American Water Works Association convention in New Orleans April 25-28. This trip starts from Boston and New York on April 21, going through Philadelphia, Harrisburg, Pittsburgh, Cincinnati, Louisville and Birmingham. Trains from other points will arrive in Birmingham in time to enjoy inspection trips to the American Cast Iron Pipe, McWane Cast Iron Pipe, National Cast Iron Pipe and the United States Pipe & Foundry Companies, a trip to the impounding dam of the Birmingham Industrial Water-Supply System, where a barbecue luncheon will be enjoyed by the delegates, and a trip to the plants of the Tennessee Coal, Iron and Railroad Co. There will be a sightseeing trip for the ladies.

All transportation, inspection of plants, barbecue and dinner at the Tutwiler Hotel is with the compliments of the Birmingham Chamber of Commerce.

The party then leaves Birmingham on Saturday night for Biloxi, Miss. From there they will enjoy a special motor trip along the Gulf Coast to Pass Christian, visiting Rudolph Hecht's Japanese Gardens, which he has opened for our special enjoyment. Luncheon at the Miramar Hotel. Depart 2:45 P. M., arriving New Orleans, La., 5:00 P. M.

The return trip may be made either by rail or by leaving New Orleans on April 30 on the S. S. Dixie.

Full particulars may be procured from John S. Warde, 50 Church Street (Room 1365), New York.

Low-Cost Hydraulic Power for Snow-Plows

When a truck driver is sent out with a snow-plow, he has about all he can do to handle the truck without taking time to crank the plow up or down. For this reason, Blackhawk Manufacturing Co., Milwaukee, Wis., has developed a simple, easily operated remote-control hydraulic unit for raising and lowering snow-plows. This unit, called the Power-Packer, is a specially adapted Blackhawk pump with a convenient handle having a modern all-tight grip similar to a gear-shift lever, which operates in two directions. There is no danger of accidentally lowering the load by pushing the handle of the Power-Packer sidewise, because it just can't be done. The positive release valve for lowering the load is an all-tight lever located at the end of the Power-Packer, making it possible to release the load at any position regardless of the position of the pump handle. The degree to which the release valve is open controls the speed of the plow.

The complete Power Packer is installed on the floor of the cab, and the head may be placed in any one of twelve positions to bring the release valve and handle at the most convenient angle for the truck operator. This unit is operated entirely by hand and requires no attachment to a power take-off or other portion of the truck. The oil line outlet is located at the top of the unit and connects directly to the ram which controls the position of the snow-plow.

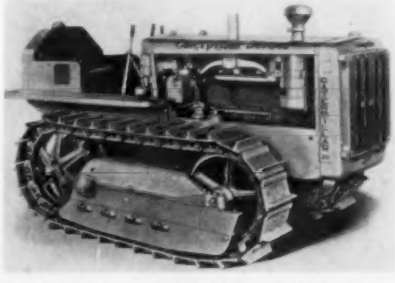
New Small Tractor with Diesel Power Has Finger-Tip Steering

A new practical-size tractor developing 25.5 hp at the drawbar has been announced by Caterpillar Tractor Co., Peoria, Ill., for handling the smaller blade graders, maintenance machines, terracers, roll-over scrapers and similar loads. On this kind of work, under normal conditions, the engine of the new diesel D2 uses only 1¼ gallons of low-cost fuel an hour as compared with 2 gallons of gasoline.

The new tractor has a four-cylinder engine with a bore and stroke of 3¾ x 5 inches. Starting is done by an independent 10-hp engine which provides ample power to turn the larger engine against full compression for as long as may be necessary. The starting engine cranks the diesel through a pinion and clutch arrangement, and automatically disengages as soon as the diesel fires. The use of this independent engine insures easy and rapid starting, regardless of the temperature or climatic conditions. A hot water manifold on the front side of the fuel filter housing is another all-weather feature. This keeps the diesel oil at the proper temperature regardless of operating conditions during the coldest weather.

The D2 engine has a twin radiator, one part of which is used for cooling the water, and the other for cooling the lubricating oil. The importance of cooling the lubricating oil has long been recognized by tractor and automotive engineers to maintain its viscosity.

With increased leverage on the steering levers, the diesel D2 tractor is reported to be the easiest steering track-type tractor ever offered. With literally finger-tip steering control, the machine is flexible and easily maneuverable under all conditions. Heavy-duty, slow-speed steering clutches standard with Caterpillar are used. The master clutch lever is hand-operated, and the entire tractor is readily accessible for maintenance and necessary adjustments or repairs when necessary.



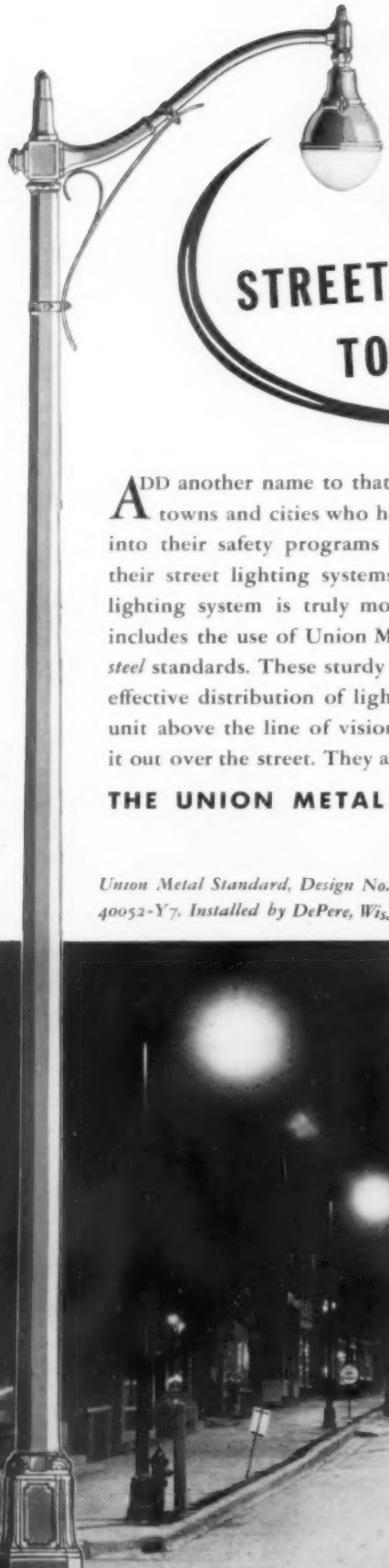
THE NEW CATERPILLAR DIESEL D2 TRACTOR

THE HERCULES TIRE-PACK DUMP-BODY WITH THE SPARE TIRES OUT OF THE WAY

Spare Tires Carried Under Truck Bodies

The new Hercules Tire-Pack, made by Hercules Steel Products Co., Galion, Ohio, is a novel method of taking care of the spare tire problem on dump-truck bodies. The tire compartment carried under the forward end of the body is burglar-proof, dirt-proof and weather-proof, but the tire is still easily accessible for any necessary changes. This type of mounting does not add to the height of the truck, and the full length of the truck's frame is still utilized without having to sacrifice any part of the chassis back of the cab for mounting the spare tire and wheel.

This Tire-Pack dump body is available with 7½- and 8-foot bodies, and the body is powered by the Hercules super power center-lift hoist.



"Save Lives with Light"

DEPERE, WIS., MODERNIZES STREET LIGHTING SYSTEM TO MEET TODAY'S TRAFFIC NEEDS

ADD another name to that growing list of towns and cities who have put "punch" into their safety programs by modernizing their street lighting systems. And DePere's lighting system is truly modern because it includes the use of Union Metal *heavy gauge steel* standards. These sturdy poles assure the effective distribution of light by raising the unit above the line of vision and extending it out over the street. They are built to withstand traffic shocks and their tall, slender style enhances the appearance of any street—business or residential—on which they are used.

Any community considering modernization of their present street lighting system can profit from Union Metal's 32 years of experience in this specialized field. One of our lighting engineers will be glad to confer with you at your convenience.

THE UNION METAL MANUFACTURING COMPANY, Canton, Ohio

Union Metal Standard, Design No. 40052-Y7. Installed by DePere, Wis.

During March we hope you will remember to mention THE AMERICAN CITY.

Outdoor Lighting

A Section of THE AMERICAN CITY
Devoted to the Lighting of Streets, Highways, Bridges, Airports, Athletic Fields and Parks, and the Floodlighting of Public Buildings

Let Public Works Departments Reduce Traffic Accidents

Annual Report of the Committee on Lighting and Public Safety, American Public Works Association

IN studying the problem of increasing traffic accidents and the methods of correction which are undergoing trial throughout the country, it is the opinion of this Committee, from the broad viewpoint of public safety, that proper coordination of public works activities to determine and apply the necessary corrective measures can produce substantial results in the nation's war on traffic accidents. It is true that most public works departments are contributing to this important cause, either directly or indirectly. However, in a great majority of cases, conditions resulting from economic pressure have increased the duties and responsibilities of curtailed departments to such an extent that traffic safety, but little heard of until the boom days of 1929 when we were all too busy to give it any attention, has grown up, a rebellious orphan who is in need of corrective guidance and properly coordinated supervision.

Having "growed up," much like Topsy, it is not at all the exception to find accident records kept by the police department but never put in a form that is actually usable by the planning commission, for traffic signals to be installed by some other department entirely on the basis of popular demand, for safety zones to be located wherever the maximum number of transportation lines converge, and for street lighting to be apportioned in accord with the willingness of property owners to meet assessments.

By comparison, a sales manager in private enterprise will carefully weigh the relation, and consequent budget appropriation, to advertising, window displays, direct mail promotion, catalogs, and traveling salesmen. Similarly, the administration of safety is in need of properly balanced coordination to bring together the facts and determine the reason why 40,000 lives should be lost in accidents throughout the nation in a single year, with substantially no means for improvement yet in sight.

To be true, the degree of safety may depend upon public education and enforcement, but the first requisite of motor-vehicle transportation on which we are placing the responsibility for accidents is a public thoroughfare on which to travel. This thoroughfare, its planning, construction, and maintenance is a public works function forming the fundamental basis for all traffic safety. It therefore seems logical that the coordination of safety administration should, in no small degree, become a function of public works.

Where public works departments do not include provisions for traffic engineering, such facilities should properly be considered. Accident records obtained from enforcement authorities should, through proper interpretation, become an all-important factor in city planning, determination of the facilities for traffic control, street lighting, and many of the other important functions of public works.

To demonstrate how traffic-accident experience can be applied, the city of Detroit found that for a period of approximately 34 months, from the beginning of 1934 until the latter part of 1936, 31 miles of its main thoroughfares showed an accident experience of 146 fatalities during the night hours and 21 fatalities in the daytime, a ratio of 7 to 1.

In many cities these accidents might have been charged up to speed, drunken driving, pedestrian carelessness, fatigue or many of the other causes which often command public attention but share less major responsibility for accidents than we are frequently led to believe. No doubt many of these factors were present in the fatal accidents in Detroit, but the degree of their importance was questioned by the officials.

The conclusion was accordingly reached that improved street lighting for modern traffic conditions should be provided, and in the period of from nine to thirteen months since the installations have been completed on the various streets, the merits of this remedy have been demonstrated by an experience of but 14 fatalities at night and 10 during the associated hours of daylight, giving a ratio of less than 1½ to 1. On one particular section of Grand River Boulevard, 1¾ miles in length, there were 13 fatalities at night and none during the daytime. With fourteen months' experience under improved lighting, there has been but one fatality at night and correspondingly one in the daytime.

To those cities interested in lighting as a remedy for their traffic accidents, it will be of interest to know that in both the old and the improved lighting installations the same size lamps were used (10,000 lumens) and the spacing remained the same. The improvement consisted in the use of a new and more efficient type of equipment at 22-foot mounting height instead of 18 feet as had formerly been employed. The average horizontal footcandles were increased from 0.32 to 1.12. The result in saving of life and property damage speaks for itself.

With such tangible evidence revealed in the case histories of several cities which are improving accident experience by the careful determination of needed remedies and the properly balanced administration of these remedies, this report is concluded with the following resolution:

Because public works departments have jurisdiction over street construction and maintenance;

Because public works planning affords the best opportunity to remedy hazardous or inadequate traffic facilities;

Because public works departments ordinarily embrace the necessary engineering staff;

Because the elimination of traffic friction and other major contributing causes of accidents can be best accomplished by building safety into public thoroughfares;

Because the physical characteristics of intersections, traffic islands, safety zones, pavement surfaces, roadway ballasting, together with facilities for traffic control and lighting, are primarily responsible for the degree of safety which can be afforded on public thoroughfares;

Whereas, 14,000 persons were killed on city streets last year and virtually all city or metropolitan areas maintain a Department of Public Works which includes or is closely coordinated with all of the administrative units interested in safety;

It is therefore recommended that public works executives direct the maximum attention possible to public safety with a view of organizing the functions of their departments to adequately determine and most effectively combat the contributing causes of accidents within their authorized jurisdiction. It is further recommended that the American Public Works Association lend such steering and advisory support as can properly be carried on within the scope of the Association activities.

W. T. Blackwell
S. C. Lovett
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Paul H. Goodell, Chairman

Do You Work to a Plan?

THE first element of a comprehensive street-lighting plan is a zoning layout in which all streets are classified in accordance with their lighting requirements; and then the adoption of a standardized lighting system for each street classification. Accident records should be analyzed to find out what streets or portions of streets have an abnormal after-dark hazard. These locations should be lighted adequately at once. Further steps can then be taken on the basis of results.

Pawtucket Samples Modern Lighting

By ALBERT J. LAMARRE
Public Works Commissioner, Pawtucket, R. I.

ARMISTICE BOULEVARD, one of Pawtucket's recently improved thoroughfares, has been provided with a system of high-visibility incandescent lighting which pleases city officials and public as well as lighting engineers. A mother recently remarked that she no longer fears to let her boy ride his bicycle at night along the street though it carries a trolley-coach line.

Lighting units designed by General Electric engineers have been installed by the Blackstone Valley Gas and Electric Co. along the 4-foot center grass plot which separates the 28-foot asphalt roadways. The ornamental standards, made by the Union Metal Manufacturing Co., are spaced 140 feet apart, and the luminaires are mounted two to a standard at right angles to the roadway, a light center 24 feet above the pavement. The lamps are on multiple circuits.

Armistice Boulevard runs largely through residential territory. Luminaires were therefore designed to benefit not only motorists and pedestrians, but to shield houses from objectionable light as well. Equipped with 300-watt incandescent lamps, the luminaires have scientifically designed hemispherical reflectors which conserve upward light and direct a high portion of the generated illumination downward into a prismatic refractor globe. This is spun or permanently sealed onto the reflector to prevent dirt and insects from reducing the efficiency of the luminaire. The refractor distributes the light up and down the boulevard. Rain and snowstorms have put the lighting system to severe tests which have proved the value of modern design, and this convinces me that our traffic arteries will be similarly lighted in the near future.

UNDERWATER LIGHTING OF THREE-LEVEL ROTUNDA INCLUDED IN WEST SIDE DEVELOPMENT, NEW YORK CITY

This fountain at the foot of West 79th Street is lighted by 24 Russell & Stoll 250-watt bronze underwater floodlights of the spread-light type with clear lens set in a rubber gasket. The lighting of the entire project was described in the January issue by Park Commissioner Robert Moses

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The American City

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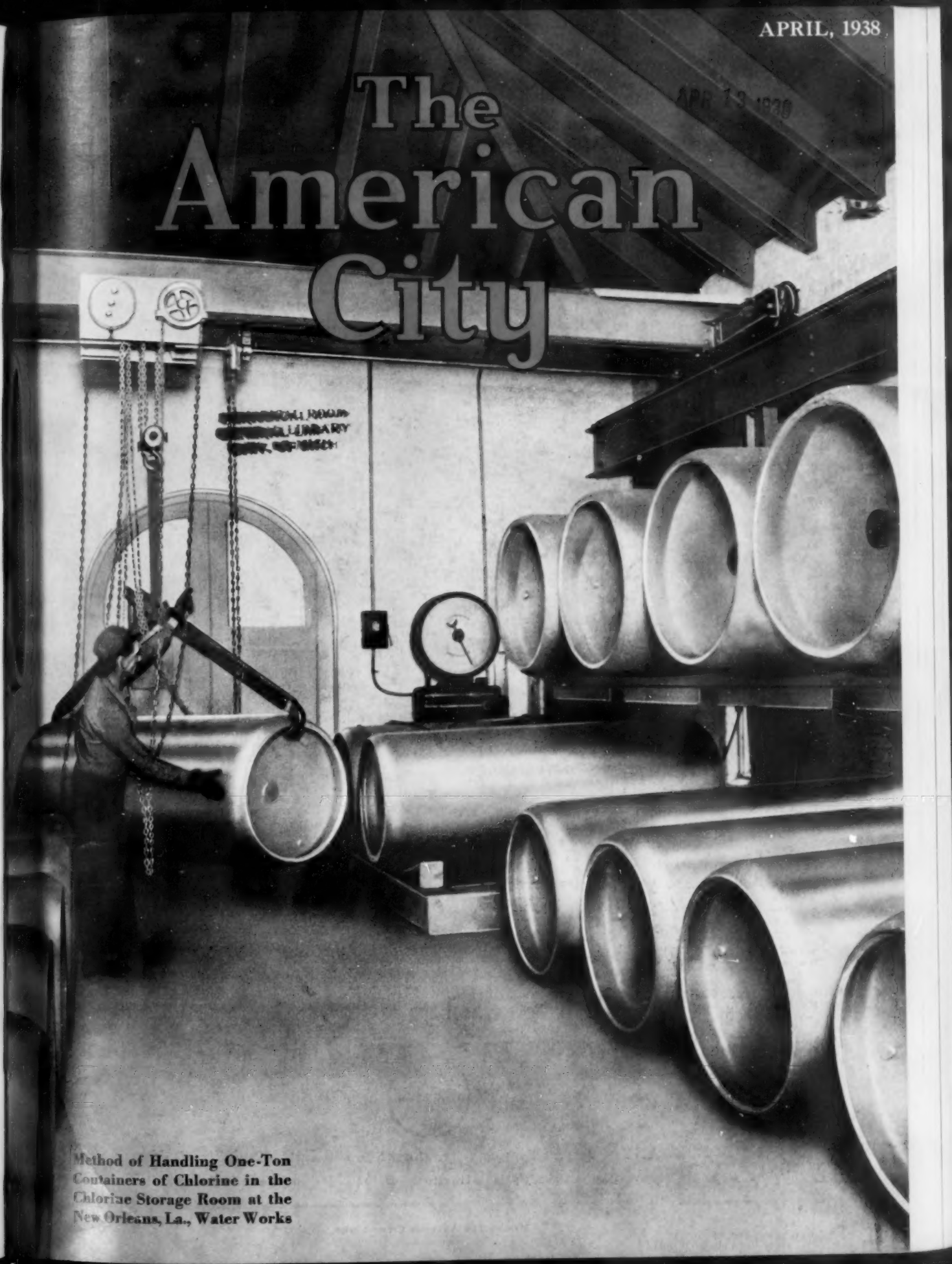

Method of Handling One-Ton Containers of Chlorine in the Chlorine Storage Room at the New Orleans, La., Water Works